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JUNE 1989

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# A Micro

## Editor's Corner

By B. R. Ross

*Mike  
This is what  
I've been  
talking  
about  
It's HOT!!  
-D*

Fasten your seatbelts, Mac® fans. You're about to enter the Microsoft Zone.

Earlier this week I witnessed a demo of Microsoft's products that left me feeling as enlightened as the day I first set my eyes on a Macintosh®.

Here's a company with a reputation for singularly superior products. But what they showed me pushed the envelope of software productivity:

**A complete line of products for the Mac that all work together.**

The significance of which hit me like a ton of bricks when I saw them in action.

For instance, I saw a **chart** in your very favorite **spreadsheet** and mine, **Microsoft® Excel**, updated from within **Microsoft Word 4.0** using just a few **keystrokes**. And then pasted into **PowerPoint®** for an incredible looking presentation.

And with just as little effort, the ever-capable **Microsoft Word 4.0** was merged with **Microsoft's database application, File**, for a mass mailing.

As if that wasn't enough, I saw their versatile integrated program **Works** share files with **Microsoft Excel** and **Word**.

What really blew me away is Micro-

soft Mail. You can send and receive information between members in your work-group even if they're on a PC. Nice.

But the real beauty is that you can **access Microsoft Mail directly from the File menu when you're in Microsoft Word 4.0**. No other company can offer that kind of integration. Or this kind:

A product line that all works together.

With other applications on the Mac. And even with such PC standards like **Lotus® 1-2-3®**, **Microsoft Word 5.0** and **WordPerfect®**.

What's more, every product is supported by **on-line help and a comprehensive manual**. Or you can call one number for unlimited technical support.

Obviously, I'm impressed. So much so, that I've asked Microsoft to send copies of their Macintosh product line brochure in time for our next meeting. If you can't make it, you can always **get a free copy** by calling **(800) 541-1261, Dept. I92**.

Fellow Macphiles, man your Macs. Because we're entering a new age of compatibility—or at least Microsoft is.

And I don't know about you, but I plan on going along for the ride.

*Here's a company with a reputation for singularly superior products. But what they showed me pushed the envelope of software productivity: A complete line of products that all work together.*

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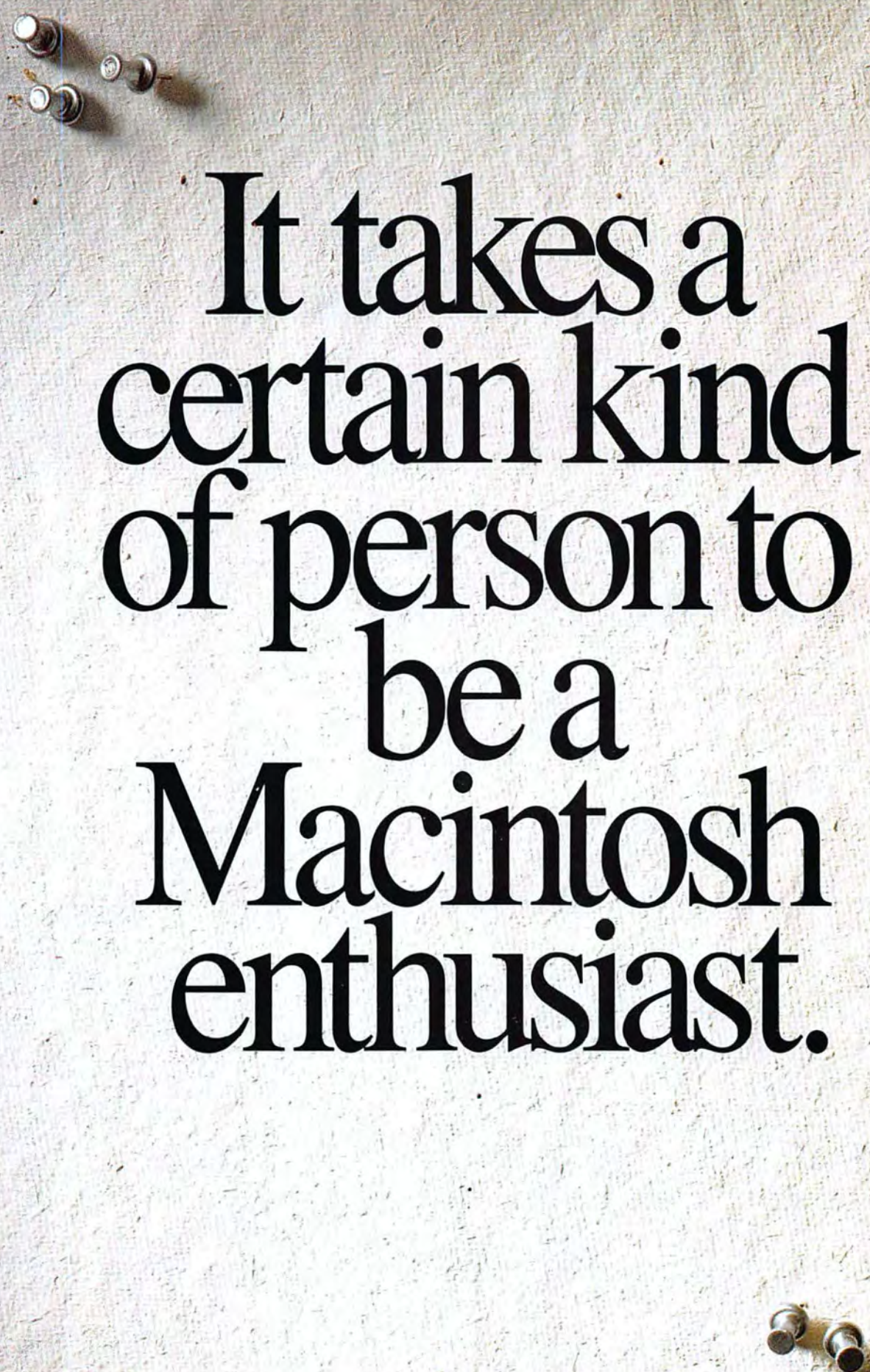


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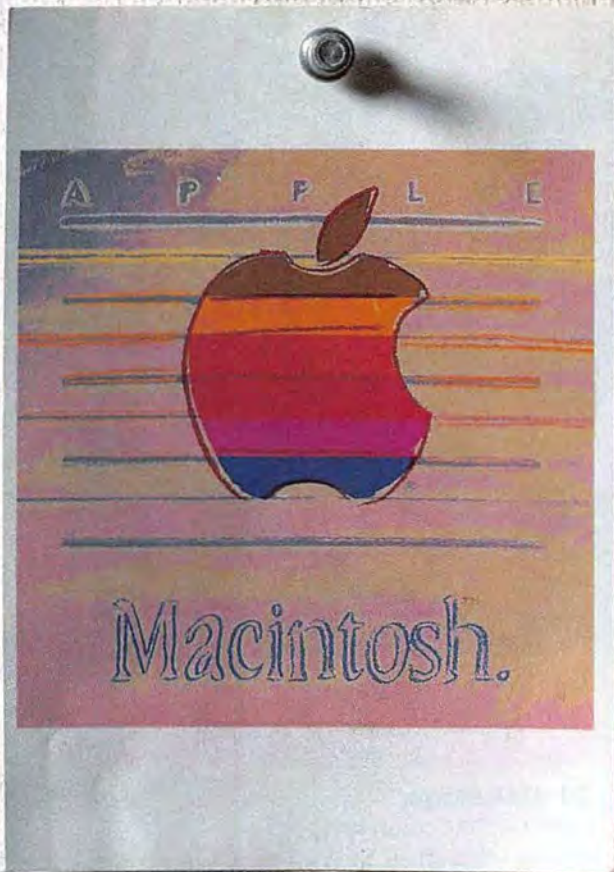
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# MacUser

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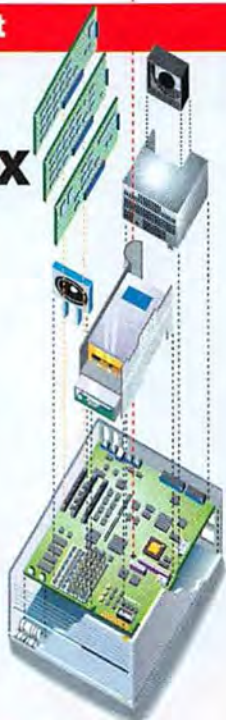
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We love to get tips and hints (on disk, please) from our readers. Any tips should be sent to The Tip Sheet, c/o *MacUser* Magazine, 950 Tower Lane, 18th floor, Foster City, CA 94404. We can't print every tip, but we try our best to pick the most interesting and representative ones for publication. We'd also like to hear from any programmers who are interested in contributing to our utilities disk series or labs benchmark disk series. If interested, contact Michele Stokol, at the same address.

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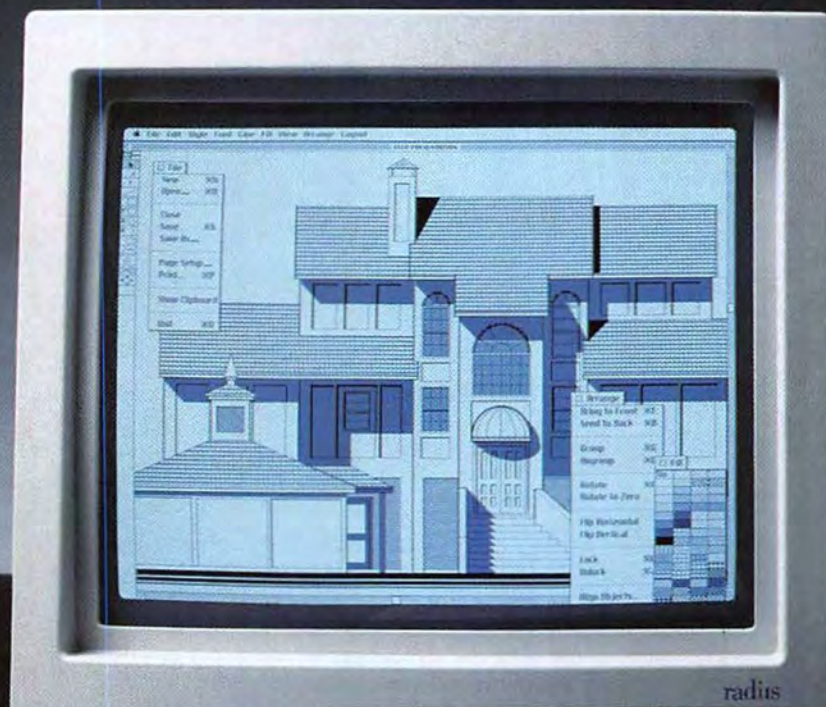
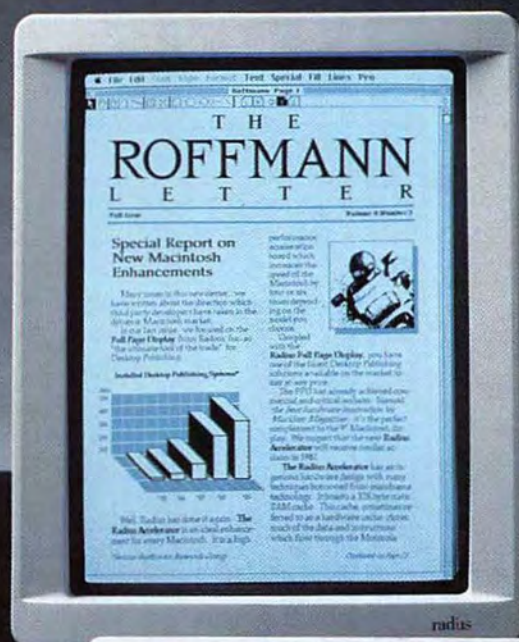
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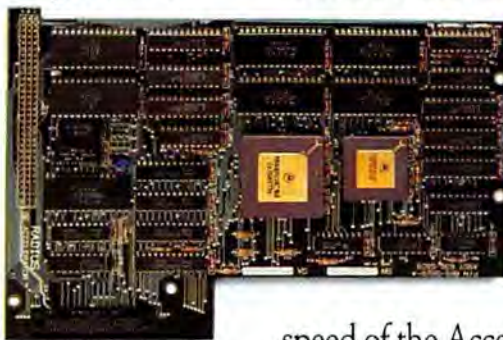
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As a result, you can use WriteMove to compose documents with word processing software like Microsoft® Word, or desktop publishing programs like PageMaker®. And then silently print them out at 192-DPI resolution. In other words, you get much

higher print quality than the ImageWriter® II, for not much more money.

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# INTRODUCING THE MOST INGENIOUS PORTABLE PRINTER SINCE THE PENCIL.





I've seen the light.

I've spent the past six years as an editor of *PC Magazine* watching microcomputers churn through the corporate landscape like Sherman barreling across Georgia.

I've witnessed a liberation of business and creative brainpower that makes me wonder how people without PCs get any work done at all — they might just as well scratch their words and numbers in the dirt with a sharp stick.

But I've also seen a torrent of frustration from DOS users faced with the daily onslaught of arcane syntaxes, absurdly thorny commands, and impossibly confounding interfaces.

DOS workers who initially reveled in the promise of productivity began slamming into the same gray wall. While their hardware became faster and far more muscular, their software

remained cranky, unintuitive, and maddeningly difficult. In fact, as vendors "im-

proved" their software by larding on layers of bells and whistles, the packages became even tougher to master. Few users ever took advantage of more than a small fraction of the available power.

forced, kicking and screaming, to use a Mac. Like most other DOS diehards, I had nervously poked through the entrails of Apple's original 128K system when it was first introduced and had glibly dismissed it as a toy. While in the intervening years the Mac had evolved into a true rival and worthy competitor (some would say successor) to the PC, most DOS hounds always thought of it as that original crippled, slow, squinty monochrome tombstone. Until recently, so did I.

Then I suddenly had to produce a tricky report using Mac software that was completely alien to me.

It was a snap. And a pleasure. I was instantly productive, and at a high level. The Mac had so many built-in user smarts that it ended up dispatching many of the housekeeping chores that would have distracted my thought processes on the PC.

Best of all, once I was done, I decided to see what else was on the hard disk and *was actually able to walk through a half dozen other new applications in minutes*. Try that on any other system.

## EDITOR'S DESKTOP

# DOS-to-Mac Conversion



By PAUL SOMERSON

It was as if a caterpillar metamorphosed into a butterfly, emerged from the chrysalis, flexed its wings, and then dropped back to the ground and resumed crawling.

Worse, instead of designing truly innovative products, vendors began bullying each other with "look-and-feel" lawsuits. This had the chilling effect of forcing each new software designer to come up with an interface that was utterly foreign to the legions of current users. Most of the software was unintuitive to start with and didn't provide much, if any, on-line help. And most people would rather have their teeth drilled than be forced to plod through a tall stack of manuals.

As a result, DOS users often learned only as little as they could get away with to finish a specific job. Most operated solely by brute force. And few figured out how to stumble through more than one or two applications. In addition, the numbing complexity and counterintuitive baggage of most interfaces ensured that users wouldn't be able to test-drive new products — most could barely even figure out how to turn an unfamiliar application on.

One day not long ago, while visiting a DOS-free office, I was

A chip is a chip. These days one manufacturer's state-of-the-art CPU is about as good as the next. Processing is processing; storage is storage. But DOS machines pretty much stop there, almost totally ignoring I/O. What sets the Mac apart is the magic it performs on the I and the O — which is what let me get up to speed in an instant and crank out a proposal so impressive-looking that I actually thought it was someone else's as it chugged out of the shared printer. Once you get past a certain level of CPU power, easy input is all the user really cares about, and spiffy output is all the client/boss/reader/coworker wants.

Besides, ever since David put out Goliath's lights, everyone cheers for the underdog, especially one employing a potent new technology. Maybe Ron Martinez said it best. Martinez is someone else who's seen the light. He's president of TRANS Fiction Systems, a Mac programming shop housed in a converted mortuary on Manhattan's upper West Side.

One of Martinez's new ventures is a slick animation package that competes with an entrenched Mac graphics product. When asked how he hopes to succeed against such seemingly insurmountable odds, he says it's like the challenge faced by Apple and compares it with the Cretaceous extinction 65 million years ago.

Or as Ron puts it: "Large, dominant companies can easily become slow, plodding, and complacent, like the dinosaurs that once ruled the earth. We have to think of ourselves as the small, nimble early mammals that survive and eventu-

**E**veryone  
cheers for the  
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# QUICK CHANGE ARTIST.

EDITOR'S

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**You need a gray scale scanner for your Mac. So you go to your ImageWriter.<sup>®</sup> Pop out the ribbon cartridge. Snap in ThunderScan.<sup>®</sup> Insert your artwork. And quicker than you can say Van Gogh, you're already going.**

---

ThunderScan lets you import quality images into all painting, drawing and desktop publishing programs.

Contrast and brightness are fully adjustable.

And now ThunderScan 5.0 loads TIFF files and lets you display and edit grays on your Mac II.

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FOR MACINTOSH

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ThunderScan is compatible with the Macintosh 512K enhanced, Plus, SE and Mac II and all ImageWriter models except the LQ. Use on the Mac II requires our *Power Accessory for Macintosh II*. ThunderScan, Thunderware and its logo are trademarks of Thunderware, Inc. Macintosh and ImageWriter are trademarks of Apple Computer, Inc. ©1989 Thunderware, Inc.



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ally prevail by eating the dinosaurs' eggs."

Apple has also obviously seen the light in incorporating so many solid Xerox PARC ideas into one capable (but overpriced) package and in upgrading its basic system to keep up with market demands while maintaining its consistent and intuitive interface. But will enough DOS users switch sides? Will the millions of currently noncomputerized potential buyers select a pricey Mac over a cheaper 286 DOS commodity box? And will Apple be able to maintain its cutting-edge technology lead before IBM perfects a similar interface and tries to stub out the Mac like a cigarette?

The market has changed dramatically over the past two years. Macs are no longer strangers to the business world. But they need to infiltrate even more corporate offices. And they also need to multiply once they make it inside.

*MacUser* will be changing as well. We'll be providing far more exhaustive, head-to-head product evaluations than anyone else in the industry. We're greatly expanding the size and scope of *MacUser* Labs to back up these reviews with even more rigorous, real-world benchmarking and torture testing. We'll be starting several brand-new sections to help you wring increased horsepower out of your system without having to learn any technical mumbo jumbo. (If you thought you were already pretty productive, just wait until we show you how to really stomp on your system's accelerator.)

We'll give you clear, specific strategies for getting more Macs into more businesses more easily — and using them to work far better than you ever imagined once they're there. But we'll always remember what sets the Mac apart. While we'll focus increasingly on turning the Mac into an even more powerful business tool, we won't forget the flash and dazzle and creativity and fun. It'll be business without being boring. We'll provide all of this while publishing the best columnists, reviewers, analysts, strategists, and feature writers pounding away at keyboards today.

And don't be surprised if we crack a few eggs in the process. 



# Built to scale

If you design on a Mac II, a screen that's too small will cramp your style. That's why you should be looking into a SilverView from Sigma Designs.

At 21", this landscape monitor offers the biggest viewing area anywhere. A full 16" x 12" 2-page spread including rulers and margins.

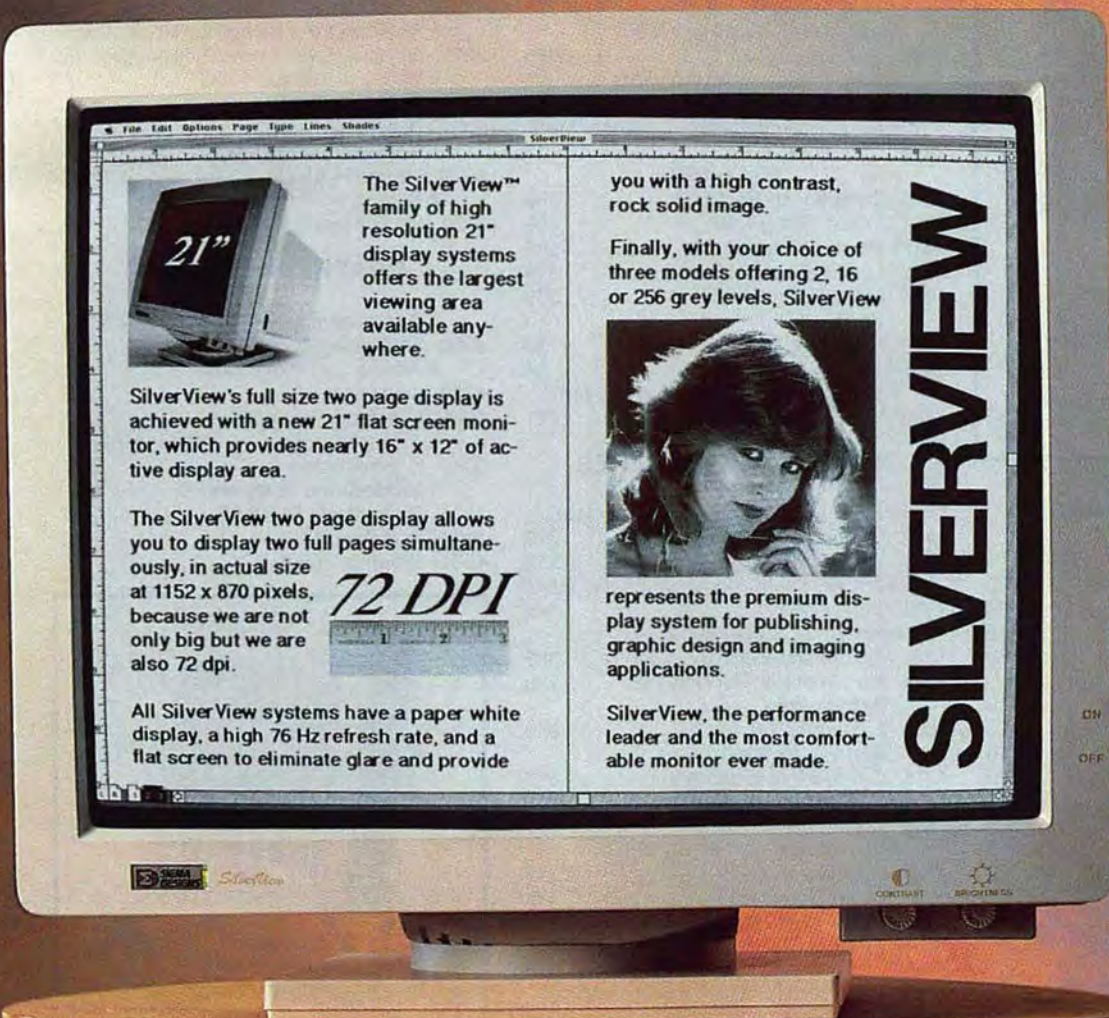
Which means you can finally work in actual size. A fact that's also made possible by SilverView's 72 dots per inch typesetting standard.

Something else should weigh in our favor.  
The gray scale.

Besides black and white, there are SilverView models offering 16 or all 256 different shades of gray. So what you used to leave up to the imagination can now be in all your work. Like subtle halftones or delicate shadings.

SilverView's also remarkably comfortable to work with. Its high contrast flat-screen virtually eliminates glare and distortion. And its unusually high refresh rate delivers rock solid images that never flicker.

To find out just how much better your work can look, call Sigma Designs at (415) 770-0100 today.  
Then never scale down your ideas.



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Sigma Designs, Inc.  
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Fremont, CA 94538



# A midsummer

Hold on to your hats! Hold on to your feet! And hold on to your original packaging and documentation! Because, MacConnection is now offering 30 and 60 day money-back guarantees on products from selected companies. (Look for the companies which are marked with a ★ and listed in red.) If you are dissatisfied with your purchase of these products for any reason, just call for a hassle-free return authorization.

We only carry the latest versions of products. Version numbers in our ads are current at press time. Also, all of the software we sell is not copy-protected, unless indicated otherwise by (CP).


The four-digit number next to each product is the product's ITEM NUMBER. Please refer to this number when ordering. Thank you.



**Symantec ... 30 day MBG**  
S.U.M. 1.1—1989 MacUser Editors' Choice Award for Best New Utilities and Desk Accessories. "The clear winner in reducing worries about losing data. A well-crafted product." ... \$65.

## ACCOUNTING & FINANCE

<b>★Aatrix Software ... 30 day MBG</b>		
3976	Aatrix Payroll 3.05	99.
4021	Aatrix TimeCard 2.0	109.
4020	Aatrix TimeMinder 2.0	159.
3958	Aatrix Payroll PLUS 3.02	159.
<b>Bedford Software</b>		
4977	Simply Accounting 1.04	219.
<b>★Chang Labs ... 60 day MBG</b>		
1613	Rags to Riches Ledger 3.1	119.
1614	Rags to Riches Payables 3.1	119.
1617	Rags to Riches Receivables 3.1	119.
1622	Rags to Riches 3-Pak	289.
1612	Inventory Control 2.6	239.
1615	Professional Billing 2.9	239.
1616	Professional 3-Pak	359.
1618	Retail Business 3-Pak	359.
<b>Dac Software</b>		
4502	Dac-Easy Light 1.0	42.
<b>Informix</b>		
4955	Wingz 1.0	269.
<b>★Intuit ... 30 day MBG</b>		
2425	Quicken 1.01	32.
<b>★MECA ... 60 day MBG</b>		
2796	Managing Your Money 2.0	125.



**T/Maker ... 30 day MBG**  
WriteNow 2.0—1989 MacUser Editors' Choice Award for Best New Word Processor. "Mail merge, a 100,000-word spelling checker, and direct opening and saving of various file formats from within the program." ... \$109.

<b>Monogram</b>		
2779	Business Sense 1.2	279.
<b>★Nantucket ... 30 day MBG</b>		
2971	McMax	175.
<b>★Nolo Press ... 60 day MBG</b>		
2981	WillMaker 3.0	32.
<b>★North Edge Software ... 30 day MBG</b>		
2986	Timeslips III 1.1	117.
<b>★Satori ... 30 day MBG</b>		
3978	Components GL 1.0	389.
3324	Project Billing 1.56	409.
4987	Project Billing + 1.56	589.
3323	Legal Billing II 2.56	539.
4986	Legal Billing II + 2.56	589.
<b>SoftView</b>		
3471	MacInUse	42.
3473	TaxView Planner 2.0	64.
<b>★Survivor Software ... 30 day MBG</b>		
3289	MacMoney 3.02	61.

## NUMBERS & DATABASES

<b>★Abacus Concepts ... 60 day MBG</b>		
4482	StatView SE + Graphics 1.03	229.
4481	StatView II 1.03	339.
<b>★Access Technology ... 60 day MBG</b>		
1346	Trapeze 2.1	149.
<b>★Acius ... 30 day MBG</b>		
1010	4th Dimension 1.0.6	389.
4024	4th Dimension Runtime 1.06	229.
<b>Ashton-Tate</b>		
4098	Full Impact 1.0	249.
<b>Blyth Software</b>		
4318	Omni 3 Plus/Express 3.3	399.
<b>Borland International</b>		
1508	Reflex Plus 1.01	189.
<b>★BrainPower ... 60 day MBG</b>		
1532	DataScan 1.0	115.
1535	DesignScope 1.15	128.
1534	MathView Professional 1.1	139.
1537	StatView 512 + 1.2	152.
3960	ArchiText 1.03	179.
4066	The Analyzer Bundle (includes DataScan, DesignScope, and StatView 512+) ...	319.
<b>★Bravo Technologies ... 30 day MBG</b>		
1539	MacCalc 1.2D	77.
<b>★Chang Labs ... 60 day MBG</b>		
1611	C.A.T. 2.0	229.

## Claris

4196	FileMaker II 1.0	\$229.
1125	MacProject II 1.0	379.
<b>★Fox Software ... 30 day MBG</b>		
4580	FoxBASE +/Mac Runtime	158.
4195	FoxBASE +/Mac 1.1	205.
4844	FoxBASE +/Multi-User	315.
<b>Individual Software</b>		
4720	101 Macros for Excel	37.
<b>★Microsoft ... 30 day MBG</b>		
2866	File 2.0A	129.
2884	Works 2.0	189.
2865	Excel 1.5	255.
<b>★Nolo Press ... 60 day MBG</b>		
4228	For the Record 1.02	29.
<b>★Odesta ... 30 day MBG</b>		
4211	DataDesk Professional 2.0	289.
3014	GeoQuery 1.0	295.
3013	Double Helix II 2.0R51	339.
<b>★Paracomp ... 30 day MBG</b>		
4664	Milo 1.0	159.
<b>★Preferred Publishers ... 30 day MBG</b>		
4780	Database 1.01	75.
<b>★ProVUE ... 60 day MBG</b>		
4582	Panorama 1.1	205.
<b>★Rubicon Publishing ... 60 day MBG</b>		
3272	Dinner At Eight-Encore Edition (CP)	45.
<b>★Satori ... 30 day MBG</b>		
3320	BulkMailer 3.22	79.
3321	BulkMailer Plus 3.22	195.
<b>Software Discoveries</b>		
3373	Record Holder Plus 3.0	65.
<b>★Synergy ... 30 day MBG</b>		
3129	KaleidaGraph 1.10	119.

## GRAPHICS & DESIGN

<b>★Aegis Development ... 60 day MBG</b>		
4956	Showcase F/X 1.0	205.
<b>★Altsys ... 30 day MBG</b>		
4830	KeyMaster 1.0	52.
1194	FONtastic Plus 2.02	52.
<b>★Bright Star Tech. ... 30 day MBG</b>		
3962	HyperAnimator 1.5	99.
<b>Broderbund Software</b>		
4065	PosterMaker Plus 2.5B	35.
1427	Print Shop 1.3	35.
4501	Drawing Table 1.0	76.



**Farallon Computing ... 30 day MBG**  
MacRecorder 1.1—Honorable mention—1989 MacUser Editors' Choice for Music and Sound. A microphone for your Macintosh. "Allows sounds to be sampled and captured." Includes SoundEdit. ... \$135.



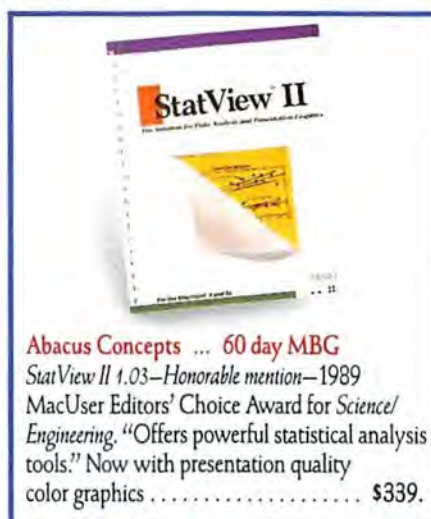
# night's dream.



**Fox Software ... 30 day MBG**  
*FoxBASE+/Mac 1.1—1989 MacUser Editors' Choice Award for Best New Relational Database.*  
*"It's blindingly fast and has much of the Mac look and feel grafted onto its DOS roots."* \$205.

- ★Casady & Greene ... 60 day MBG**  
 1575 Fluent Fonts 2.0 ... 27.  
 4835 Fluent Fonts/SC ITC Garamond ... 39.  
**★Challenger ... 30 day MBG**  
 1610 Mac3D 2.1 ... 119.  
**Claris**  
 1123 MacPaint II 2.0 ... 99.  
 1117 MacDraw II 1.0 ... 309.  
 4815 Smart Form Designer ... 309.  
 4814 Claris CAD ... 629.  
**Cricket Software**  
 4346 Cricket Paint 1.0 ... 99.  
 1667 Cricket Draw 1.1.1 ... 168.  
 5086 Cricket ColorPaint 1.0 ... 179.  
**★Deneba Software ... 30 day MBG**  
 1769 Canvas 2.0 ... 159.  
**★DreamMaker ... 60 day MBG**  
 4088 MacGallery (MacPaint format) ... 27.  
**Dubl-Click Software**  
 LaserType Vol. 1-6 ... each 45.  
 3972 World-Class Fonts! Originals (1-2) ... 45.  
 3973 World-Class Fonts! The Stylish (3-4) ... 45.  
 3974 World-Class Fonts! The Giants (5-6) ... 45.  
 3964 WetPaint Classic Clip-Art (1-2) ... 45.  
 3965 WetPaint For Publishing (3-4) ... 45.  
 3966 WetPaint Animal Kingdom (5-6) ... 45.  
 3967 WetPaint Special Occasions (7-8) ... 45.  
 3968 WetPaint Printer's Helper (9-10) ... 45.  
 3969 WetPaint Industrial Revolution (11-12) ... 45.  
 3970 WetPaint Old Earth Almanac (13-14) ... 45.  
 3971 WetPaint Island Life (15-16) ... 45.  
 4940 WetPaint All the People (17-18) ... 45.  
**Electronic Arts**  
 4315 Studio/8 1.0 ... 309.  
**★Enabling Technologies ... 30 day MBG**  
 1871 Pro3D ... 285.  
 5020 Clip 3D Fonts ... 57.  
 5019 Clip 3D Accents ... 57.  
 5022 Clip 3D Geography ... 57.  
 5023 Clip 3D Messages ... 57.

- 5024 Clip 3D People ... \$57.
- 
- 5025 Clip 3D Recreation ... 57.
- 
- 5027 Clip 3D Lifestyle ... 57.
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- 5026 Clip 3D Business ... 57.
- 
- Enzan-Hoshigumi USA**
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- 1879 MacCalligraphy 2.0 ... 99.
- 
- ★Foundation Publishing ... 60 day MBG**
- 
- 2384 Comic Strip Factory 1.6 ... 42.
- 
- 2385 Comic People ... 24.
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- ★Generic Software ... 60 day MBG**
- 
- 4319 Generic CADD Level 1 1.1 ... 89.
- 
- ★Graphsoft ... 30 day MBG**
- 
- 4993 MiniCad+ ... 519.
- 
- ★Great Wave ... 30 day MBG**
- 
- 2272 Crystal Paint 1.0 ... 27.
- 
- Innovative Data Design**
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- 2417 MacDraft 1.2B ... 145.
- 
- 4707 Dreams 1.0 ... 275.
- 
- ★MacroMind ... 30 day MBG**
- 
- 4953 VideoWorks II 2.0 ... special 150.
- 
- 4952 VideoWorks II HyperCard Driver 1.2 ... 60.
- 
- 4954 VideoWorks II Accelerator 1.1 ... 115.
- 
- Miles Computing**
- 
- 4847 Mac the Knife Vols. 3, 4, & 5 ... special 69.
- 
- Olduvai Software**
- 
- 4667 Art Clips ... 51.
- 
- 4850 Art Fonts 1 ... 55.
- 
- 4851 Art Fonts 2 ... 55.
- 
- ★Paracomp ... 30 day MBG**
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- 4597 Swivel 3D 1.0 ... 249.
- 
- 5028 Model Shop 1.0 ... 379.
- 
- ★Silicon Beach ... 60 day MBG**
- 
- 3504 Silicon Press 1.1 ... 52.
- 
- 3506 SuperPaint 2.0 ... 129.
- 
- 3507 Super3D 2.0 ... 325.
- 
- 3980 Digital Darkroom 1.0 ... 195.
- 
- ★Solutions, Intl. ... 60 day MBG**
- 
- 3446 The Curator 1.05 ... 75.
- 
- ★SuperMac Software ... 60 day MBG**
- 
- 3380 PixelPaint 2.0 ... 199.



**Abacus Concepts ... 60 day MBG**  
*StatView II 1.03—Honorable mention—1989 MacUser Editors' Choice Award for Science/Engineering.* "Offers powerful statistical analysis tools." Now with presentation quality color graphics ... \$339.

- ★Symmetry ... 30 day MBG**  
 4160 PictureBase 1.23-WetPaint Bundle \$89.  
**★T/Maker ... 30 day MBG**  
 3633 Christian Images ... 35.  
**★3G Graphics ... 30 day MBG**  
 3942 Images with Impact: Graphics 1 ... 59.  
 4583 Images with Impact: Business 1 ... 69.  
**★Zedcor ... 60 day MBG**  
 3986 DeskPaint & DeskDraw 2.01 ... 69.



**CE Software ... 60 day MBG**  
*QuickMail 2.0—Honorable mention—1989 MacUser Editors' Choice Award for Networking. The Ultimate E-Mail and more. Plus... FREE... Vaccine—1989 Most Significant Product Eddy Award winner.*  
 Both in one great package ... \$205.

## PUBLISHING & PRESENTATIONS

- Adobe Systems**  
 1138 The Collector's Edition ... 79.  
 4816 The Collector's Edition II ... 139.  
 5001 StreamLine ... 239.  
 1142 Newsletters/Publishing Pack 1 ... 249.  
 4565 Forms and Schedules Pack 2 ... 299.  
 4566 Presentations Pack 3 ... 299.  
 1137 Adobe Illustrator '88 1.6 ... 299.  
*MacConnection carries the entire Adobe Type Library (volumes 1-82). Listed below are Adobe's newest typefaces at press time.*  
 4577 67 ITC Clearface ... 245.  
 4578 68 Americana ... 125.  
 4579 69 ITC Serif Gothic ... 182.  
 4817 70 Century Expanded ... 95.  
 4818 71 Serifa ... 182.  
 4819 72 Caslon Open Face ... 63.  
 4820 73 Frutiger ... 245.  
 4821 74 Centennial ... 245.  
 4822 75 Stemple Garamond ... 125.  
 4823 76 Weiss ... 125.  
 4824 77 Garamond 3 ... 125.  
 4825 78 Universal News Com/Greek ... 95.  
 4826 79 Avenir 1 ... 182.  
 4827 80 Avenir 2 ... 182.



# The fastest shipping



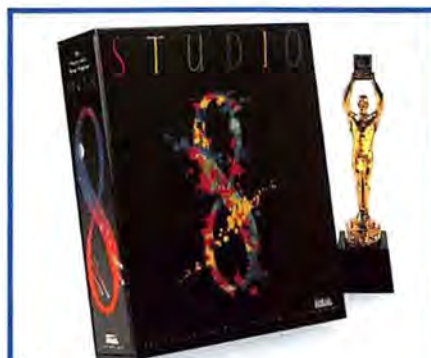
## Intuit ... 30 day MBG

*Quicken 1.01*—1989 MacUser Editors' Choice Award for Best New Personal Financial Package. "Hands-down winner in this category. Surprises you by delivering an entire personal or small business accounting system." ... \$32.

4828	81 Bauhaus	125.
4829	82 Antique Olive	125.
	<b>Aldus</b>	
1330	Freehand 2.0	349.
4751	Persuasion 1.0	385.
1331	PageMaker 3.01	389.
	<b>Altsys ... 30 day MBG</b>	
1195	Fontographer 2.4.1 (CP)	229.
	<b>Broderbund</b>	
4465	DTP Advisor 1.0	47.
	<b>Casady &amp; Greene ... 60 day MBG</b>	
	MacConnection carries the entire collection of Fluent Laser Fonts ea.	46.
4839	Vivid Impressions	69.
4838	Quill Pack (Vol. 8 & 20)	105.
4836	Headline Pack (Vol. 10-12)	145.
4837	Modern Pack (Vol. 7, 14-18)	195.
4834	Distinctive Pack (Vol. 8, 19-22)	195.
4833	Classic Pack (Vol. 3-6, & 13)	195.
	<b>Cricket Software</b>	
1668	Cricket Graph 1.3	115.
1670	Cricket Presents 2.0	289.
	<b>DreamMaker ... 60 day MBG</b>	
4840	Cliptures: Business 1	95.
4841	Cliptures: Business 2	95.
	<b>Farallon Computing ... 30 day MBG</b>	
4684	ScreenRecorder 1.0	135.
2199	MacRecorder 1.1	135.
	<b>Letraset</b>	
5047	StandOut 1.0	175.
2621	Ready, Set, Go! 4.4.5	275.
2619	Image Studio 1.5	275.
4709	LetraStudio 1.0	289.
	<b>Microsoft ... 30 day MBG</b>	
2878	PowerPoint 2.01	255.
	<b>Postcraft International</b>	
3157	Laser FX 1.6	99.
	<b>Quark</b>	
4621	QuarkStyle 1.0	189.
3230	Quark XPress 2.0	499.
	<b>Softstream Int'l., Inc. ... 60 day MBG</b>	
4996	UltraSpec 1.0	95.
	<b>Springboard</b>	
3530	Certificate Maker 2.0	24.
4497	Top Honors	59.
4500	Springboard Publisher 1.0	109.
	<b>T/Maker ... 30 day MBG</b>	
3635	EPS Illustrations	75.

## PROGRAMMING & HYPERMEDIA

	<b>Beacon Technology ... 30 day MBG</b>	
4967	HyperBible (King James)	\$159.
4968	HyperBible (New International)	195.
	<b>Borland International</b>	
1511	Turbo Pascal 1.1	68.
	<b>DreamMaker ... 60 day MBG</b>	
4115	MacGallery (HyperCard format)	27.
	<b>Hyperpress Publish. ... 30 day MBG</b>	
4233	Icon Factory 1.0	29.
5089	Script Library 1.0	29.
5090	Silver Screen 1.0	42.
4265	Script Expert 1.0	46.
	<b>Ideaform</b>	
2418	HyperBook Maker 1.0	31.
	<b>Individual Software</b>	
4719	101 Scripts & Buttons for Hypercard	37.
	<b>Manx Software ... 60 day MBG</b>	
4068	Aztec C 3.6B	65.
4317	Aztec SDB	65.
4316	Aztec C UniTools	65.
4069	Aztec MPW C 3.6B	99.
4075	Aztec C + SDB 3.6B	99.



## Electronic Arts

*Studio/8 1.0*—1989 MacUser Editors' Choice Award for the Best New Paint Program. "Offers every imaginable tool and the ability to work with all the colors a Mac II can display." \$309.

	<b>Microsoft ... 30 day MBG</b>	
4471	QuickBasic 1.0	65.
	<b>OWL International ... 30 day MBG</b>	
3082	Guide 2.0	99.
	<b>SmethersBarnes ... 30 day MBG</b>	
1478	Prototyper 2.0	149.
	<b>Softworks, Inc.</b>	
4601	Stack Cleaner	29.
4599	HyperTools #1 1.02	59.
4600	HyperTools #2 1.03	59.
	<b>Symantec ... 30 day MBG</b>	
4644	Just Enough Pascal 1.0	49.
3421	Lightspeed Pascal 2.0	85.
3420	Lightspeed C 3.01	149.
	<b>TENpoint0</b>	
1338	Reports! 1.2	69.
4638	Focal Point II 1.0	119.
	<b>TML Systems ... 30 day MBG</b>	
3548	TML Source Code Library II 1.1	42.
4989	TML Pascal II 3.0 (w/o MPW 3.0)	59.
3549	TML Pascal II 3.0 (w/MPW 3.0)	115.
	<b>True BASIC, Inc.</b>	
3587	True BASIC 2.01	59.

## ★Zedcor ... 60 day MBG

3985	ZBASIC 5.0	\$99.
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## UTILITIES

	<b>Affinity Microsystems ... 60 day MBG</b>	
1014	Affinifile 1.1	46.
1016	Tempo II 1.0	89.
	<b>Berkeley System ... 30 day MBG</b>	
1541	Stepping Out II 2.01	52.
	<b>Beyond, Inc.</b>	
4203	MenuFonts 2.02	29.
	<b>Casady &amp; Greene ... 60 day MBG</b>	
2269	QuickDEX 1.4A	32.
	<b>CE Software ... 60 day MBG</b>	
1727	CalendarMaker 3.0	27.
1728	DiskTop 3.0.4	27.
4689	MockPackage Plus Utilities 4.4	27.
1729	CentralKeys 1.1	52.
	<b>Central Point</b>	
5040	Copy II Mac 7.2	20.
5041	PC Tools Deluxe Mac 1.1	42.
	<b>Dubl-Click Software</b>	
1824	Calculator Construction Set 1.04	35.
	<b>Electronic Arts</b>	
1843	Disk Tools Plus 1.01	31.
	<b>Fifth Generation ... 60 day MBG</b>	
4287	PYRO! 3.3 (screen saver)	15.
3954	PowerStation 2.5	32.
3955	Suitcase II 1.2.2	45.
3953	FastBack Mac 1.3	54.
	<b>FWB Software ... 30 day MBG</b>	
2232	Hard Disk Partition 2.0	41.
4683	Hard Disk DeadBolt 1.0	53.
	<b>HJC Software ... 30 day MBG</b>	
4803	Virex 1.3	69.
	<b>ICOM Simulations</b>	
4084	On Cue 1.3	36.
	<b>Ideaform</b>	
2419	DiskQuick 2.10	27.
2420	MacLabeler Plus 3.0	42.
	<b>Kent Marsh Ltd. ... 30 day MBG</b>	
2591	The NightWatch 1.02	87.
2592	MacSafe 1.08C	87.
	<b>Lundeen &amp; Assoc. ... 60 day MBG</b>	
2683	WorksPlus Command 2.0	57.
	<b>MEDIAGENIC</b>	
4591	Open It! 1.0	49.



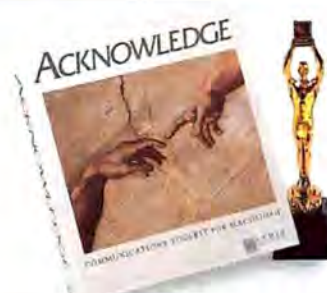
## Softworks, Inc.

Each package includes 16 development tools.  
*HyperTools #1 1.02*—For stack design, icon editing, and alignment (incl. HyperCard) \$59.  
*HyperTools #2 1.03*—For enhancing stacks, data entry, and formatting (incl. HyperCard) \$59.



# you've ever seen.

<b>★Microlytics ... 60 day MBG</b>		
2732	GOfer 1.0	\$43.
<b>★Microseeds Pub. ... 60 day MBG</b>		
4848	INITPicker	29.
4210	Screen Gems 1.0	47.
2913	Redux 1.5	59.
<b>Olduvai Software</b>		
4503	MultiClip 1.0	36.
3031	Icon-It! 1.1	39.
5030	ClipShare 1.0	99.
3030	FontShare 1.1	149.
<b>★PCPC ... 30 day MBG</b>		
3175	HFS Backup 3.0	54.
<b>★Solutions, Intl. ... 60 day MBG</b>		
3448	SmartScrap & The Clipper 2.0	46.
3449	SuperGlue 1.05	50.
<b>★SuperMac Software ... 60 day MBG</b>		
3383	SuperSpool 5.0	53.
3382	SuperLaserSpool 2.0	79.
3378	Multi-User SuperLaserSpool 2.0	199.
3377	Diskfit 1.5	53.
3379	Network Diskfit 1.5	199.
3381	Sentinel 2.0	89.
<b>★Symantec ... 30 day MBG</b>		
4728	MacSQZ! 1.51	52.
4729	S.U.M. 1.1	65.
<b>★Symmetry ... 30 day MBG</b>		
3318	HyperDA 1.1	35.



**Acknowledge 1.0**—1989 MacUser Editors' Choice Award for Best New Telecommunications Product. "We salute it for offering us a glimpse of what telecommunications might be like in the near future." ... \$329.

<b>★Williams &amp; Macias ... 30 day MBG</b>		
3783	myDiskLabeler w/Color 2.9.11	31.
3784	myDiskLabeler w/LaserWriter 2.9.11L	34.
4976	Sticky Business 1.0.4	99.
<b>Working Software</b>		
3788	Findswell 2.0	36.

## WORD PROCESSING

<b>★Access Technology ... 60 day MBG</b>		
3959	MindWrite 2.1	95.
4109	MindWriteExpress 2.1	139.



**Insignia Solutions**  
SoftPC 1.3—Honorable mention—1989 Editors' Choice Award for Connectivity. (Mac to Non-Mac). "Emulates a PC on a Mac II." Requires less memory, & works with FDHD drives. ... \$249.

<b>★Aegis Development ... 60 day MBG</b>		
1133	Word Tools 1.2	42.
<b>Ashton-Tate</b>		
1324	FullWrite 1.0	269.
<b>★Deneba Software ... 30 day MBG</b>		
4700	BigThesaurus (1.4 million words)	54.
1767	Comment 2.0	54.
1768	Coach Professional 3.0A	105.
<b>Electronic Arts</b>		
1543	Thunder II 2.0	52.
<b>★Lundeen &amp; Assoc. ... 60 day MBG</b>		
2684	WorksPlus Spell 2.0	46.
<b>★Microlytics ... 60 day MBG</b>		
2733	Word Finder 2.0	33.
4870	Electronic WordFinder 220	79.
<b>★Microsoft ... 30 day MBG</b>		
2885	Write 1.0	79.
2882	Word 4.0	255.
<b>★Niles &amp; Associates ... 30 day MBG</b>		
5048	EndLink 1.0	59.
4602	EndNote 1.1.1	82.
<b>★Preferred Publishers ... 30 day MBG</b>		
4781	Vantage 1.0	59.
<b>★Sensible Software ... 30 day MBG</b>		
4692	BookEnds 1.0	53.
3375	Sensible Grammar 1.1D	53.
<b>Software Discoveries</b>		
3374	Merge Write 1.0	34.
<b>★Symantec ... 30 day MBG</b>		
3422	More II 2.0	255.
<b>★Symmetry ... 30 day MBG</b>		
4504	Acta Advantage 1.0	65.
<b>★T/Maker ... 30 day MBG</b>		
3639	WriteNow 2.0	109.
<b>WordPerfect</b>		
3800	WordPerfect Mac 1.0.1	185.
<b>Working Software</b>		
3792	Spellswell 2.0G	45.
4693	Quick Letter 1.0	75.

## MUSIC & EDUCATION

<b>★Ars Nova ... 60 day MBG</b>		
1215	Practica Musica 2.1	\$75.
<b>★Bogas Productions ... 60 day MBG</b>		
4255	Super Studio Session 2.0	75.
1461	Studio Session 2.0	49.
<b>★Bright Star Tech. ... 30 day MBG</b>		
1402	Alphabet Blocks 3.01	32.
3961	Talking Tiles 1.0	69.
<b>Broderbund Software</b>		
4314	Type! 1.0	20.
1423	Jam Session 1.1 (CP)	30.
1422	Geometry 1.0 (CP)	59.
4067	Calculus 1.0 (CP)	59.
<b>Coda Music Systems</b>		
4367	MacDrums 1.01 (CP)	32.
4483	Perceive 1.0	52.
<b>Davidson &amp; Associates</b>		
1734	Math Blaster! 1.0 (CP)	27.
4978	Speed Reader II 1.0 (CP)	36.
<b>Electronic Arts</b>		
3941	SmoothTalker 2.0	33.
3935	Speller Bee	33.
4619	Mavis Beacon Typing 1.2B	35.
1846	Deluxe Music Construction Set 2.5	85.
<b>★Great Wave ... 30 day MBG</b>		
2277	TimeMasters 1.0	22.
2276	KidTime 1.2	26.
2270	American Discovery 2.1	27.
4334	NumberMaze 1.0	27.
2273	ConcertWare+ 4.0	39.
2271	ConcertWare+ MIDI 4.0	79.
<b>Individual Software</b>		
4209	Typing Instructor Encore	26.
<b>Learning Company</b>		
2670	Reader Rabbit 2.0 (CP)	32.
<b>Mindscape</b>		
2748	The Perfect Score: SAT 1.0	46.



**Williams & Macias ... 30 day MBG**  
Sticky Business 1.0.4—Solves your business labeling problems. Design and print distinctive preformatted labels, cards and tags using your Mac. Be creative with text and graphics. \$99.



# This is for real:

## ★Personal Training Sys. ... 60 day MBG

MacConnection carries the entire PTS collection. A partial listing follows.

- 4946 Excelerate (beginner level) . . . . . \$29.
- 4852 PageTutor (beginner level) . . . . . 39.
- 4947 LearnWord (beginner level) . . . . . 39.

### Primera Software

- 5003 Different Drummer . . . . . 59.

## ★Simon & Schuster ... 60 day MBG

- 3305 Typing Tutor IV 1.2 . . . . . 35.

## ★Spinnaker ... 30 day MBG

- 2329 SAT Score Improvement 1.0 (CP) . . . . . 57.

### Springboard

- 4493 Atlas Explorer (CP) . . . . . 28.

## ★Think Educational ... 60 day MBG

- 3615 MacEdge II 1.0 (CP) . . . . . 27.

## ★Unicorn ... 30 day MBG

- 3751 Animal Kingdom (CP) . . . . . 27.
- 3756 Math Wizard (CP) . . . . . 27.

## ENTERTAINMENT

### Access Software

- 4655 World Class Leader Board Golf . . . . . 28.

## ★Accolade ... 30 day MBG

- 1184 Hardball (CP) . . . . . 23.
- 4484 Mean 18 (CP) . . . . . 23.
- 4485 4th and Inches (CP) . . . . . 23.

### Activision

- 4475 Quarterstaff (CP) . . . . . 30.
- 4486 Manhole . . . . . 30.
- 4592 Zork Zero (CP) . . . . . 36.

### Broderbund Software

- 4099 Shufflepuck Cafe (CP, air hockey) . . . . . 24.
- 4111 Moebius (CP, adventure & arcade) . . . . . 24.
- 4229 Where is Carmen Sandiego? (CP) . . . . . 27.
- 4965 Auto Duel (CP) . . . . . 27.
- 4966 SimCity (CP) . . . . . 27.
- 1421 Ancient Art of War (CP) . . . . . 27.
- 4540 Ancient Art of War at Sea (CP) . . . . . 27.

### Bullseye

- 1544 Ferrari Grand Prix (CP) . . . . . 32.
- 4074 P51 Mustang Flight Simulator (CP) . . . . . 32.

## ★Casady & Greene ... 60 day MBG

- 2268 Crystal Quest 2.2C . . . . . 26.
- 4119 Crystal Quest w/Critter Editor 2.2C . . . . . 42.

## ★Discovery Software ... 30 day MBG

- 4408 Arkanoid . . . . . 27.

## Electronic Arts

- 1842 Chessmaster 2000 (CP) . . . . . \$28.
- 4064 Chuck Yeager Flight Simulator (CP) . . . . . 32.
- 4588 Life & Death (CP, surgery simulation) . . . . . 32.
- 4945 The Hunt for Red October (CP) . . . . . 32.
- 4981 Starfleet 1: The War Begins . . . . . 36.

### Epyx

- 2037 Sub Battle Simulator . . . . . 29.
- 4660 Sub Battle Simulator for Mac II . . . . . 29.

### MicroProse

- 4697 Pirates! (CP) . . . . . 32.

## ★Microsoft ... 30 day MBG

- 2868 Flight Simulator (CP) . . . . . 33.

### Miles Computing

- 2767 Harrier Strike Mission II (CP) .special . . . . . 27.
- 2765 Fool's Errand (CP) . . . . .special . . . . . 27.

### Mindscape

- 4083 Balance of Power 1990 (CP) . . . . . 30.
- 3987 Colony (CP) . . . . . 30.
- 4596 Deja Vu II (CP) . . . . . 30.

### PBI Software

- 3110 Strategic Conquest Plus 2.0 . . . . . 35.
- 4985 NetTrek—The Real Version . . . . . 35.

### PCAI

- 3144 MacGolf 2.0 (CP) . . . . . 35.



## Casady & Greene ... 60 day MBG

Crystal Quest w/ Critter Editor 2.2C—1989 MacUser Editors' Choice Award for Best New Recreation Program. "Clear winner: import digitized sounds as well as edit game play itself!" . . . . . \$42.

Crystal Quest 2.2C . . . . . 26.

- 4320 MacGolf Classic (CP) . . . . . 54.
- 4321 Lunar Rescue (CP) . . . . . 34.
- 4517 Road Racer (CP) . . . . . 39.

### Sierra On-Line

- 3397 Leisure Suit Larry (CP) . . . . . 23.
- 3396 King's Quest III (CP) . . . . . 29.

## ★Silicon Beach ... 60 day MBG

- 3501 Apache Strike . . . . . 27.
- 3503 Dark Castle . . . . . 27.
- 3502 Beyond Dark Castle . . . . . 27.
- 3508 World Builder . . . . . 41.

## ★Simon & Schuster ... 60 day MBG

- 3303 Star Trek Kobayashi Alternative (CP) . . . . . 24.

### Sir-Tech

- 3347 Mac Wizardry (CP) . . . . . 35.

## ★Softstream Int'l., Inc. ... 60 day MBG

- 4071 MacMan (w/adaptor) . . . . . 24.
- 4072 The Solitaire DA . . . . . 24.
- 4073 Colour Billiards . . . . . 35.
- 4995 Cribbage Tutor . . . . . 27.

## ★Spectrum Holobyte ... 30 day MBG

- 4175 Solitaire Royale (for Mac SE) . . . . . 20.
- 3464 Tetris . . . . . 20.



## Silicon Beach ... 60 day MBG

Digital Darkroom 1.0—1989 MacUser Editors' Choice Award for Best New Image-Processing Software (B & W). "By offering the tools of digital photo retouching it should become a part of every scanner user's arsenal!" . . \$195.

- 4472 Tetris (color version) . . . . . 24.
- 3462 PT-109 . . . . . 26.
- 3459 Falcon 2.0 . . . . . 32.

## ★Spinnaker ... 30 day MBG

- 2328 Sargon IV (CP) . . . . . 29.

### Springboard

- 4988 Hidden Agenda . . . . . 36.

## ★SubLogic ... 60 day MBG

- 4698 Jet (CP) . . . . . 32.

## NETWORKS & COMMUNICATIONS

## ★Abaton ... 30 day MBG

- 4589 InterFAX Modem . . . . . 325.

## ★CE Software ... 60 day MBG

- 3963 QuickMail 2.0 . . . . . 205.

## ★CompuServe ... 60 day MBG

- 1676 CompuServe Information Service . . . . . 24.
- 1673 CompuServe Navigator 2.02 . . . . . 45.
- 1674 Standard Service/Navigator Bundle . . . . . 59.

## ★DataViz ... 60 day MBG

- 1823 MacLink Plus 3.0 . . . . . 139.
- 4842 MacLink Plus/Translators . . . . . 119.

## ★Dove Computer ... 60 day MBG

- 4939 FastNet III . . . . . 450.
- 4938 FastNet SE . . . . . 450.
- 4937 FastNet SCSI . . . . . 925.

## ★Dow Jones ... 30 day MBG

- 1785 Desktop Express 1.03 . . . . . 95.
- 1786 Market Manager Plus 2.0 . . . . . 189.

## ★Farallon Computing ... 30 day MBG

- 4208 Timbuktu 2.0.1 . . . . . 65.
- 4866 Timbuktu Remote 1.0.1 . . . . . 195.
- 4867 Timbuktu 30-Pack . . . . . 1395.
- 2201 TrafficWatch 1.08 . . . . . 139.
- 2202 PhoneNET-AppleTalk 120 adapter . . . . . 9.
- 2203 PhoneNET PLUS (DIN-8) . . . . . 35.
- 2204 PhoneNET PLUS (DB-9) . . . . . 35.
- 2205 PhoneNET Punch Down Block . . . . . 69.
- 4869 PhoneNET Connector 10-Pack . . . . . 225.
- 4868 PhoneNET Repeater . . . . . 325.
- 2206 PhoneNET StarController . . . . . 1199.

## ★Freesoft ... 60 day MBG

- 2219 Red Ryder 10.3 . . . . . 54.

### Hayes

- 2300 Smartcom II 3.0B . . . . . 88.
- 2307 Smartmodem 2400 . . . . . 429.



## HJC Software ... 30 day MBG

Virex 1.3—The first comprehensive solution to the threat of Mac computer viruses. Virex both detects their presence & repairs infected programs on files, disks & servers. Combats all known viruses . . . . . \$69.





## “Was I dreaming or what?”

Dear MacConnection,

I had to get a quote for a surgical laser to a surgeon before noon tomorrow. I had already missed FedEx and I hadn't even done the proposal yet. Then it hit me. What if I called MacConnection, ordered a fax board, and faxed the quote before the meeting? Was I dreaming or what?

I made the call at 7:58 PM. I prepared my quotation. The fax board arrived the next morning at 9:00 AM. By 10:30 AM I sent the quote, and even discussed it with the good doctor before the meeting. It's a good thing I was too late to call FedEx—the quote might not have made it in time.

I love it! What a company!

Mark Trigsted  
Advanced Laser Systems, Inc.  
Allentown, PA

# MacConnection<sup>TM</sup> 1-800/622-5472

MacConnection, 14 Mill Street, Marlow, NH 03456 1-800/622-5472 603/446-7711 FAX 603/446-7791

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Just for the record, all the ads in this series feature real live MacConnection customers and the real live letters they wrote us. Really!



# money back deal.

## ★PCPC ... 30 day MBG

3177	HD-WSI (Apple HD-20 to SCSI) . . .	\$269.
3189	MacBottom HD 45 SCSI . . . . .	859.
4658	MacBottom HD 84 SCSI . . . . .	1249.

## DISKS

3297	Sony 3 1/2" DS/DD Disks . . . . .	16.
3772	Verbatim 3 1/2" DS/DD Disks . . . . .	17.
2214	Fuji 3 1/2" DS/DD Disks . . . . .	17.
2792	MAXELL 3 1/2" DS/DD Disks . . . . .	17.

3298	Sony 3 1/2" HD Disks (1.44 Meg) . . . . .	39.
3773	Verbatim 3 1/2" HD Disks (1.44 Meg) . . . . .	39.
2215	Fuji 3 1/2" HD Disks (1.44 Meg) . . . . .	39.
2793	MAXELL 3 1/2" HD Disks (1.44 Meg) . . . . .	39.

## ACCESSORIES

### ★Avery ... 60 day MBG

4864	3 1/2" Disk Labels (Qty. 250) . . . . .	13.
4865	3 1/2" x 15/16" Address Labels (Qty. 3750) . . . . .	15.
4811	8 1/2" x 11" Transparencies (Qty. 50) . . . . .	22.

### Bantam Publishing

1403	Complete HyperCard Handbook . . . . .	23.
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### ★Computer Coverup ... 60 day MBG

1723	ImageWriter II Cover . . . . .	8.
1722	ImageWriter LQ Cover . . . . .	8.
1725	Mac SE Ext. Keyboard Cover Set . . . . .	10.
4657	LaserWriter II Cover . . . . .	10.

### ★Ergotron ... 60 day MBG

2004	Mouse Cleaner 360° . . . . .	15.
3992	The Muzzle (covers power outlet) . . . . .	62.
2000	MacTilt SE . . . . .	68.

### ★Goldstein & Blair ... 30 day MBG

2267	The Macintosh Bible (2nd Edition) . . . . .	20.
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### ★I/O Design ... 30 day MBG

2379	MacLuggage Imageware II . . . . .	49.
2376	MacLuggage Macinware Plus . . . . .	64.
2381	MacLuggage Macinware SE . . . . .	75.

### Kalmar Designs

2531	Teakwood Roll-top Case (holds 45 disks) . . . . .	14.
2532	Teakwood Roll-top Case (holds 90 disks) . . . . .	21.

### ★Kensington ... 30 day MBG

MacConnection carries the entire line of Kensington's accessories. Partial listing below.

2577	Mouseway (mouse pad) . . . . .	8.
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2589	Universal Printer Stand . . . . .	\$15.
4126	LaserWriter II Cover . . . . .	17.
5021	Space Saving Printer Stand . . . . .	17.
2545	Universal Copy Stand . . . . .	22.
4970	Modem/FAX Protector 10 . . . . .	15.
4971	Modem/FAX Protector 20 . . . . .	25.
4972	Power Tree 10 (good) . . . . .	19.
4973	Power Tree 20 (better) . . . . .	29.
4974	Power Tree 50 (best) . . . . .	59.
2559	Apple Security Kit . . . . .	34.
2556	Maccessories Anti-Glare Filter . . . . .	33.
2568	Maccessories SuperBase . . . . .	34.
2585	Printer Muffler 80 . . . . .	43.
2586	Printer Muffler 80 Stand . . . . .	24.
2583	Printer Muffler 132 . . . . .	58.
2584	Printer Muffler 132 Stand . . . . .	24.
4070	System Saver SE . . . . .	52.
2566	System Saver Mac (platinum) . . . . .	64.
2546	Maccessories A-B Box . . . . .	64.
5064	Apple Color Monitor Polarizing Filter . . . . .	65.
5065	Full Page Display Polarizing Filter . . . . .	65.
5066	Two Page Display Polarizing Filter . . . . .	135.
4941	Mac II Monitor Stand . . . . .	65.



### Odesta ... 30 day MBG

Double Helix II 2.0R51—Honorable mention—1989 MacUser Editors' Choice Award for Relational Database. Build powerful self-running databases with its intuitive tile-based interface . . . \$339.

4643	Mac II Stand and Cable Kit . . . . .	65.
2561	MasterPiece Mac II . . . . .	105.

### ★MacConnection ... 60 day MBG

4623	Solid Oak Disk Case, made by New England craftsmen (holds 90 disks) . . . . .	29.
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### ★Mobius Technologies ... 60 day MBG

4470	Fanny Mac QT . . . . .	60.
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### ★Moustrak ... 60 day MBG

2694	Moustrak Pad (standard 7"x9") . . . . .	8.
2692	Moustrak Pad (large 9"x11") . . . . .	9.
2693	Moustrak Pad L/F (9"x11") . . . . .	10.
	Moustrak Designer Series . . . . .ea.	12.

### Ribbons

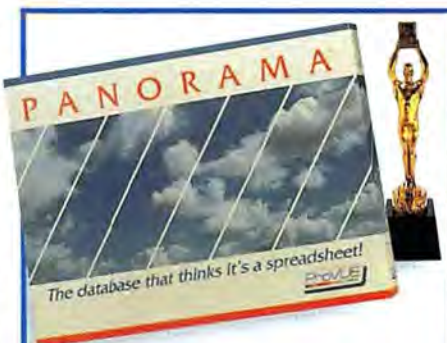
3255	ImageWriter II Ribbon . . . . .	4.
3261	ImageWriter II 4-color Ribbon . . . . .	9.
3270	ImageWriter II Rainbow Six Pack . . . . .	20.
3260	ImageWriter LQ Black Ribbon . . . . .	17.

### ★Simon & Schuster ... 60 day MBG

4230	The Fully Powered Mac book . . . . .	24.
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### ★Sopris Softworks ... 60 day MBG

4016	MacPlus Cover (navy) . . . . .	15.
4171	Mac SE Std. Keyboard Cover (navy) . . . . .	15.
4019	Mac SE & Ext. Keyboard Cover (navy) . . . . .	15.
4017	ImageWriter II Cover (navy) . . . . .	11.
4168	ImageWriter LQ Cover (navy) . . . . .	13.



### ProVUE ... 60 day MBG

Panorama 1.1—1989 MacUser Editors' Choice Award for Best New Flat-File Manager. "With the look of a spreadsheet, this RAM-based flat-file manager is extremely quick and agile." . . \$205.

4018	LaserWriter II Cover (navy) . . . . .	17.
4012	High Trek ImageWriter II carry case . . . . .	49.
4013	High Trek Mac Plus carry case . . . . .	59.
4014	High Trek Mac SE & ext. kybd. case . . . . .	69.

### ★Targus ... 60 day MBG

3618	ImageWriter II Carry Case . . . . .	49.
3617	Mac Plus/SE Carry Case . . . . .	59.
4015	Mac SE & Ext. Kybd. Carry Case . . . . .	75.

## OUR POLICY

- We accept VISA and MASTERCARD.
- No surcharge added for credit card orders.
- Your card is not charged until we ship.
- If we must ship a partial order, we never charge freight on the shipment(s) that complete the order.
- No sales tax.
- All U.S. shipments insured; no additional charge.
- APO/FPO orders shipped 1st Class Mail.
- International orders U.S. \$250 minimum.
- Upon receipt and approval, personal and company checks now clear the same day for immediate shipment of your order.
- COD max. \$1000. Cash or certified check.
- 120 day limited warranty on all products. Defective software replaced immediately. Defective hardware repaired or replaced at our discretion. All items subject to availability. Prices subject to change without notice.
- To order, call us anytime Monday through Friday 9:00 to 9:00 EST, or Saturday 9:00 to 5:30 EST. You can call our business offices at 603/446-7711 Monday through Friday 9:00 to 5:30 EST.

## SHIPPING

**Continental US:** Barring massive computer failures and other natural or unnatural catastrophes, all credit card orders phoned into MacConnection by 8 PM EST will ship Airborne the same night for next day delivery, except for those within UPS Ground Zone 1 (which is also an overnight service). The total freight charge on any order placed with MacConnection is now \$3. Backorders will also ship Airborne overnight at no additional charge. Some areas require an additional day delivery.

**Hawaii, Alaska and Outside Continental US:** Call 603/446-7711 for information.



### Ergotron ... 60 day MBG

MacTilt SE—Eliminate eye, neck & back strain. This sturdy unit allows full range of tilting & swiveling . . . . . \$68.  
Mouse Cleaner 360°—Quick & easy cleaning kit to keep your mouse rolling smoothly. . . . 15.



# A no-questions-asked

## Insignia Solutions

4089	SoftPC 1.3	\$249.
<b>★LaCie, Ltd. ... 30 day MBG</b>		
4975	LaCie Utilities 1.0 (Includes SilverLining, SilverPlatter, and SilverServer)	89.
<b>★Lamir ... 30 day MBG</b>		
4984	Acknowledge 1.0	329.
<b>★Microsoft ... 30 day MBG</b>		
2875	Microsoft Mail 1.36 (1-4 users)	195.
2872	Microsoft Mail 1.36 (5-10 users)	325.
<b>★Nuvotech ... 60 day MBG</b>		
3000	TurboNet ST (DIN-8)	30.
3001	TurboNet ST (DB-9)	30.
<b>★Practical Peripherals ... 30 day MBG</b>		
3100	1200 Baud External Modem	77.
3102	2400 Baud External Modem	179.
3089	Mac Communications Pack	225.
<b>★Shiva ... 30 day MBG</b>		
3444	NetSerial X232	289.
4347	NetBridge	349.
4942	TeleBridge	349.
3443	NetModem V2400	479.
<b>★Software Ventures ... 30 day MBG</b>		
3454	Microphone 1.5	119.
3455	Microphone II 2.0	225.
<b>★Solutions, Intl. ... 60 day MBG</b>		
4308	BackFAX (reqs. Apple FAX modem)	127.
<b>★Synergy ... 30 day MBG</b>		
3130	VersaTerm 3.20	65.
3131	VersaTerm-PRO 3.0	189.
<b>★TOPS ... 30 day MBG</b>		
3723	TOPS Mac 2.1	149.
3726	TOPS for DOS 2.1	119.
3724	NetPrint 2.0	119.
4715	InBox Connection Mac 2.2	75.
4714	InBox Starter Kit 2.2	199.
4188	TOPS Teleconnector (DIN-8)	39.
4189	TOPS Teleconnector (DB-9)	39.
4598	TOPS FlashBox	125.
3725	TOPS Repeater	129.
3720	TOPS Flashcard	169.
<b>★Traveling Software ... 60 day MBG</b>		
3729	LAP-LINK Mac 2.0	83.

## INPUT/OUTPUT

### ★Abaton ... 30 day MBG

1188	ProPoint ADB	89.
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### Paracomp ... 30 day MBG

Swivel 3D 1.0—Honorable mention—1989 MacUser Editors' Choice Award for Science & Engineering. Features full color shading & innovative linking for realistical movement. Earned a 5 mice rating from MacUser. \$249.

## Caere

4476	OmniPage 1.0	\$559.
<b>★Cutting Edge ... 30 day MBG</b>		
3988	CE 105ADB Keyboard w/QuickKeys	145.
<b>★Datadesk ... 30 day MBG</b>		
1819	MAC-101 Keyboard (beige)	145.
1820	MAC-101 Keyboard (platinum)	145.
1821	MAC-101 Keyboard (ADB)	145.
<b>★Ex Machina ... 30 day MBG</b>		
4843	WristMac	149.
5018	WristMac Executive	199.
<b>★Kensington ... 30 day MBG</b>		
2576	Turbo Mouse for Mac Plus	109.
2547	Turbo Mouse ADB	109.
<b>Koala</b>		
2593	MacVision 2.0	219.
<b>★Kraft Systems ... 60 day MBG</b>		
2600	3-Button QuickStick	39.
4082	3-Button QuickStick ADB	51.
<b>Kurta</b>		
2604	IS ADB Tablet	255.
2605	Cordless 4 Button Cursor	65.



### Fifth Generation ... 60 day MBG

Suitcase II 1.2.2—Honorable mention—1989 MacUser Editors' Choice Award for Utilities and Desk Accessories. Unlimited number of fonts & DA's without having to install them in your system \$45.

### ★LYNX Computer ... 30 day MBG

1211	LYNX Trackball	65.
1212	LYNX Trackball ADB	65.
<b>★Mobius Technologies ... 60 day MBG</b>		
4846	MultiScreen	349.
<b>★Mouse Systems ... 30 day MBG</b>		
2808	A+ Mouse	65.
2809	A+ Mouse ADB	85.
<b>★Nutmeg Systems ... 30 day MBG</b>		
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2994	15" Monitor for Mac SE	999.
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4002	19" Monitor for Mac PLUS	1349.
4096	19" Monitor for Mac SE	1349.
4097	19" Monitor for Mac II	1449.
4849	LCD Interface (Kodak DataShow)	399.
<b>Olduvai Software</b>		
3035	Read-It! OCR Personal	99.
3034	Read-It! OCR 2.0	249.
<b>★Orange Micro ... 30 day MBG</b>		
4488	Grappler Spooler	39.
3036	Grappler C/Mac/GS	79.
4076	Grappler LQ	103.
4487	Grappler LS	103.

timeslips III



### North Edge Software ... 30 day MBG

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### ★PCPC ... 30 day MBG

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5004	CGC/2 Graphics Card	1495.
<b>★PTI/DataShield ... 30 day MBG</b>		
4845	MacDirector	115.
<b>SoftStyle</b>		
3282	Printworks (Dot Matrix) 3.5	43.
3283	Printworks (HP laser) 3.6	85.
<b>Summagraphics</b>		
4298	BitPad Plus ADB	325.
<b>★Thunderware ... 30 day MBG</b>		
3648	ThunderScan 5.0 with PowerPort	189.
4994	LightningScan	409.

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<b>AST Research</b>		
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1229	Mac 286	1079.
<b>★Cutting Edge ... 30 day MBG</b>		
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3990	The Wedge XL 30+ SCSI	559.
3991	The Wedge XL 45+ SCSI	689.
<b>★Dove Computer ... 60 day MBG</b>		
1801	SCSI Interface/Port	109.
1807	MacSnap 524E	289.
1809	MacSnap 524S	379.
1811	MacSnap 548	499.
1812	MacSnap 548S	589.
1800	MacSnap 2SE	439.
1797	MacSnap Plus 2	439.
1804	MacSnap 2S	call
1805	MacSnap 4S	call
1793	MaraThon 020 MSE1	585.
1794	MaraThon 020 MSE2 (1 Meg)	979.
1795	MaraThon 020 MSE3 (math chip)	779.
1796	MaraThon 020 MSE4 (1 Meg/chip)	1159.
4231	MaraThon 020 MSE4x4	2095.
4663	MaraThon 030 Accelerator 32 Mhz	999.
<b>★LaCie, Ltd. ... 30 day MBG</b>		
4983	Maxcie Internal Drive Kit (with Epson 40 Meg, 25ms)	59.
	(with Epson 70 Meg, 25ms)	659.
4982	Maxcie External Drive Kit (with Epson 40 Meg, 25ms)	189.
	(with Epson 70 Meg, 25ms)	775.





# MAIL

M E R G E

Thomas Beckwith of Golden, Colo., has a sharp eye and a sense of humor to match. He spotted the April Fool's report in our April issue. "By the second paragraph, we were suspicious, and by the third, we knew something was definitely up. However, it wasn't until we saw the graphs that we were sure that our leg was being pulled. It's nice to know that you are willing to lampoon the occasional pretension that accompanies product reviews." We're glad you enjoyed it, Thomas, but we should clarify one point you seem to have misunderstood: It was our Labs test of bubblepack, not the cover story on financial packages, that provided the grist for the gist of our jests and jibes.

## WRITE TO:

LETTERS TO THE EDITOR, *MacUser*,  
950 TOWER LANE,  
18TH FLOOR,  
FOSTER CITY, CA 94404

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COMPILED BY JON ZILBER

## On the Money

I'd like to add a few thoughts to your very professional review of *Managing Your Money* (April '89). Though I wrote the manual, help screens, and newsletters, the critical and far larger job of programming and software design was done for MECA by Teleware, Inc., of Parsippany, N.J. Also, the check-alignment annoyance to which the review refers has been fixed in version 2.0 (leaving us to do something about the other Worst Feature cited: my "too-cute" writing style, which may be harder to repair).

Because *Managing Your Money* allows you to edit transactions, your reviewer deemed it unsuitable for small-business accounting. I think that's too broad. You're absolutely right in a situation where the "bookkeeper" is a third party and, conceivably, not to be trusted. But where the user is also the small-business owner, or where the task is delegated to someone trustworthy, I don't think it's an issue. And believe me, the ability to correct errors without having to understand double-entry accounting is welcome to many a small-business person.

Andrew Tobias  
Miami, Fla.

## Preaching to the Unconverted

Amen! to Jim Seymour's January '89 Mainstream Mac column on "The Pricing Game." I have been trying to establish myself as a computer consultant to churches for about two years now. They are extremely cost-conscious; when they can buy an IBM clone and the top-of-the-line church software for less than a Mac system with no software, arguments about ease of use and high productivity fall on ears that do not hear.

IBM has seen the error of trying to create a proprietary system. Will Apple ever give up its elitist ways and enter the world of real computing by licensing its architecture?

Dale L. Sigler  
Bloomfield, Conn.

## Sharp-Looking LCDs

Something smells in Foster City, and it's not coming from the Bay. Your January '89 report on LCD panels for over-

## QA-50

hat, like the Flat of display and a ractive use and t up to 9 frames per second.

lectronics Corp.  
Products Division  
Sharp Plaza  
Blomhah, NJ 07430  
(201) 529-8731  
\$1,395



## s and Losers

ately, this panel failed one of our key to be suitable for

head projectors ("Through the Liquid Glass") concludes that the Computer Accessories Mac Data Display is the one to buy. Why? The Mac Data Display doesn't use DTN technology, but the Sharp QA-50 does. The Data Display is Mac-only, whereas the Sharp is compatible with both IBM and Mac. The Sharp has the highest contrast ratio of any panel tested, an infrared remote control, interactive mouse control — all for a whole \$26 more than the Data Display.

For the Data Display to get a "buy" recommendation, you'd think there would have to be something terribly wrong with the Sharp QA-50. Or is it just that the oxygen on the 18th floor is thinner than it is at ground level?

George S. Ferrua  
Panama City, Fla.

*Our main problem with the Sharp unit was that its contrast dropped by 35 percent after 4 hours. Other than that, we have no problem recommending it. It's exactly because different readers value different combinations of price, performance, and features differently that we present as much data as space permits, to allow readers to identify the product that best suits their needs. — AE*

## The Right Connections

I'm impressed — an article by James Burke ("The Connection Machine," March '89)! The inclusion of the insights of such a first-class thinker in *MacUser* helps raise you above the technobabble so common to computer journals.

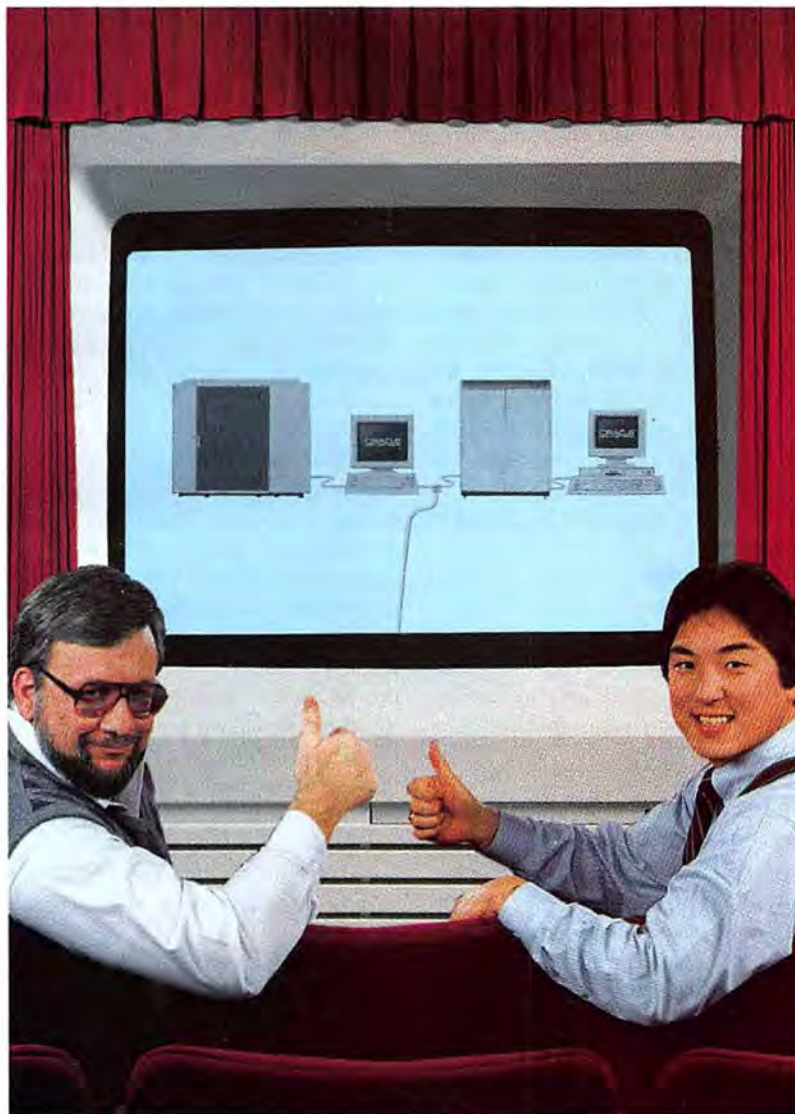
Tod Galloway  
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### The Ease of Trapeze

Your April '89 review of spreadsheets ("Fitted Sheets") missed many of the features that, for me, have made Trapeze the most powerful software package I have ever used, particularly for preparing quickly modifiable presentations that actually look like all the swanky packages and proposals we see in the Macintosh ads on TV. Your reviewer maintained that "Trapeze lacks rulers and guidelines for precision placement of blocks on the page." In fact, Trapeze *does* have rulers and a user-adjustable invisible grid.

Trapeze is conceptually much different than conventional spreadsheets. And that's true of its mathematical capabilities, not just its presentation features. (For example, Trapeze's matrix math functions can use a simple formula to create a 10-x-10 multiplication table that replaces 100 formulas in 100 cells in a conventional spreadsheet.) But anyone with a reasonable level of proficiency can master Trapeze quickly, and once you've learned it, you're reluctant to go back to anything else.

**Timothy J. Gollin  
Houston, Texas**

*You're right; Trapeze does have rulers. But because it has only an invisible grid to guide you, we don't find them to be of much use.* — JR

### A LaserPaint of a Different Color

One software package costing around \$500 has proven to be one of the most powerful components of my \$30,000 Mac-based architectural-rendering system. LaserWare's LaserPaint Color II is the most versatile drawing/painting program on the market today. I know. I researched them all. Compared to LaserPaint, most of the others are simple cartoon kits.

Your thumbnail review in MiniFinders left a very negative impression and cost me valuable time wasted looking at other, inferior, applications. What you call a "clumsy interface" is a gross injustice; you do not command a potent tool such as this without a bit of study, but what you gain is formidable. You don't climb into the cockpit of an X-16 with

only Piper Cub experience. This program offers professional graphic artists the depth and breadth they need.

**Sanborn Chase  
Pawleys Island, S.C.**

*Our January '88 review was based on version 1.1.4 (as the MiniFinder indicated), which had an interface only a developer could love. Version II is a vast improvement, and the program has gained a place in the hearts of desktop publishers everywhere. Watch for a review of the new, vastly improved LaserPaint Color II, coming soon.* — JZ

### Rounding Off

Your so-called Bug of the Month in the November '88 issue is actually the proper rule for rounding decimals ending in 5s. This rule — always round to an even number, whether that involves rounding up or down, rather than always rounding up — was formulated in pre-calculator days, when rounding was done consciously to make numbers more manageable without introducing the errors caused by simple truncation, since truly random numbers are just as likely to round up as down. Always rounding numbers ending in 5 up (or down) weights the results inaccurately, so the convention to always round even (or always round odd) was adopted so that one would round up half the time and down half the time, to cancel out this effect. I don't say that you should ask Clark Higgins to return his \$25 check, but had you followed this rule for rounding, you could have saved \$5 and written a \$20 check instead.

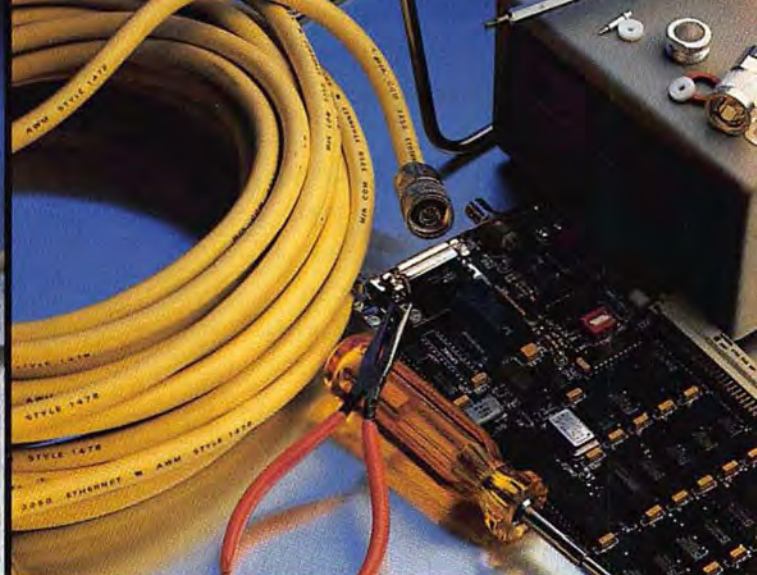
**Dr. James R. Conrad  
Salt Lake City, Utah**

*You're right, he said, extracting bits of crow from his dental work. And for computer arithmetic, rounding even is better than rounding odd. Rounding odd can produce a 5, which is the ambiguous digit, and this can propagate rounding errors. For example, rounding one digit at a time, 8.445 would round to 8.45, and then to 8.5, and finally to 9. This kind of error can't occur if you round even. For the Final Word on this topic, see the Final Authority — namely, Donald*



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## How to give Ethernet a run for the money.

Some people may think the way to rev up a LocalTalk network is to rip the whole thing out, lay some heavy cable, and send your computers out for an Ethernet implant. Spending big bucks in the process.

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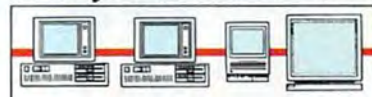
Installation won't slow you down either. FlashBox plugs right into the back of your Mac and runs over your existing twisted-pair wire. It's 100% compatible with your current applications. It communicates at FlashTalk rates with PCs using TOPS FlashCard. And, unlike Ethernet, it lets you continue printing to your LaserWriter® without buying a costly gateway.

Best of all, FlashBox is available now. So stop by your nearest TOPS dealer and find out how to rev up your network without overhauling your budget. Or call the TOPS Division of Sun Microsystems at 1-800-445-TOPS, extension 106 (from outside the U.S. and Canada, call 1-415-769-8700, ext. 106).

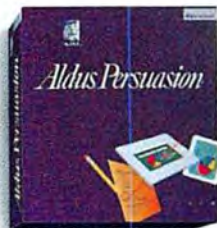
Actual performance of your network may vary depending on the quality and length of network cable, network size and configuration. To achieve best performance, you should connect a FlashBox to each Macintosh. Using FlashBox with bridges, gateways, or other AppleTalk-only devices may require network reconfiguration or the addition of repeating devices. Copyright ©1989 Sun Microsystems, Inc.

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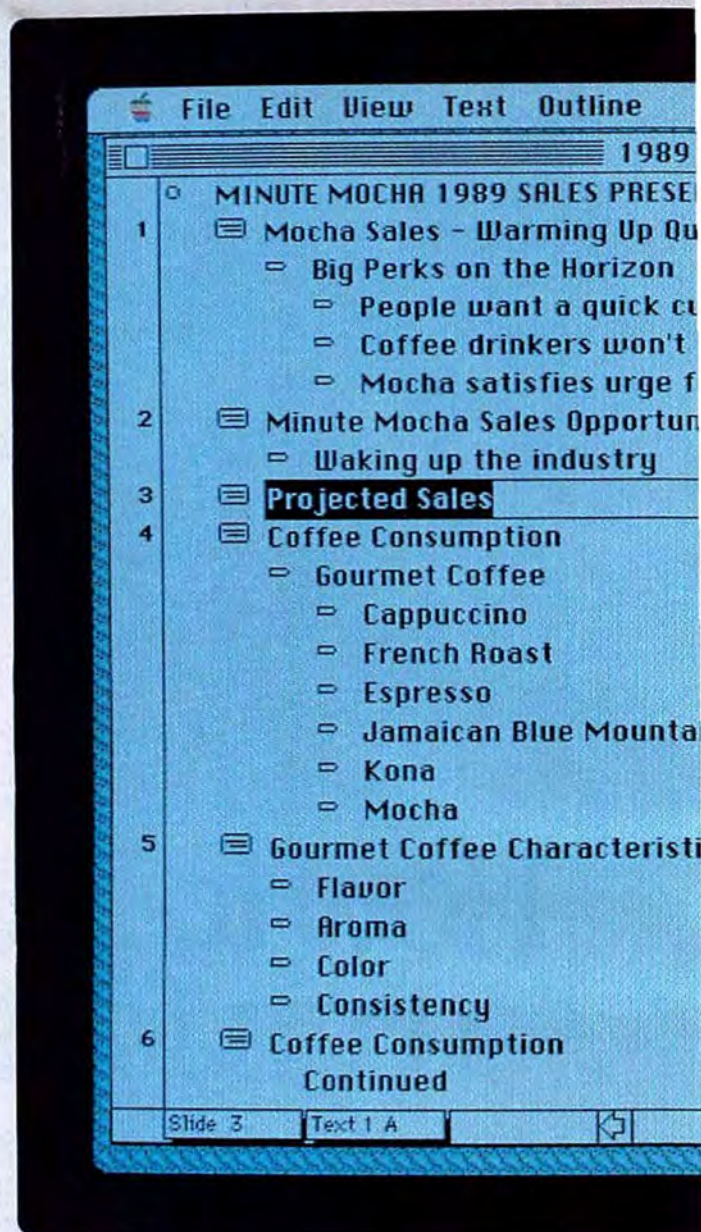
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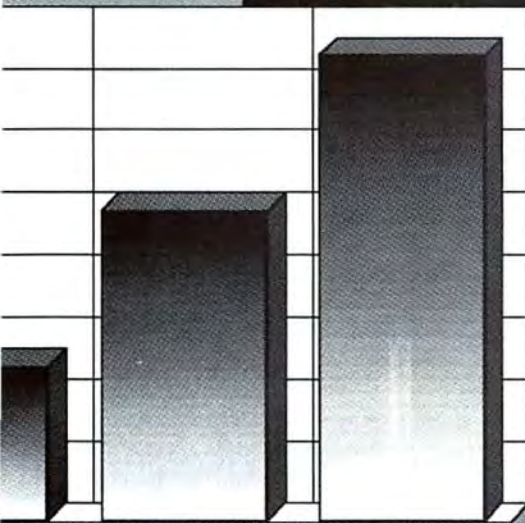
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— Bugsy

## Of Mullahs and Moolah

From time to time, you publish letters from readers who harbor deep-seated resentment about your giving John Dvorak space in your magazine. These injured readers manifest an Ayatollah-size hatred for his occasional anticlerical views of Macintosh mullahs and mythology and would banish his Satanic Verses from your pages. I consider myself an enthusiast of both the Mac and *MacUser* from the earliest days of both, but I swear I will not renew my subscription if you allow these crazed assassins to have their way.

Paul Cohen  
Westport, Conn.

*Rest assured that Dvorak is here to stay, for better or Verse. And, as the title of this month's Dvorakian diatribe demonstrates, he's clearly caught the Salmonella bug.* — JZ

## Clarifications

### Accelerated Information

The February '89 *MacUser* Labs test of accelerator boards should have mentioned that Irwin International is now marketing the MacPEAK Systems Orion accelerator cards. Also, the accelerator board shown on page 169 is a Gemini 030 from Total Systems Integration, 99 W. 10th St., Eugene, OR 97401; (800) 874-2288.

### Silicon Beach on the Move

In the January '89 review of Super 3D, we gave the old address for Silicon Beach Software. The new address is 9770 Carroll Center Road, Suite J, San Diego, CA 92126; (619) 695-6956.

### In Search of Infosphere, Insignia

Infosphere's phone number was printed incorrectly in the April '89 review of Liaison. The correct number for Infosphere is (503) 226-3620. Insignia was listed in our March '89 edition of MiniFinders at an incorrect address. Its correct address is 787 Lucerne Drive, Sunnyvale, CA 94086; (408) 522-7600.

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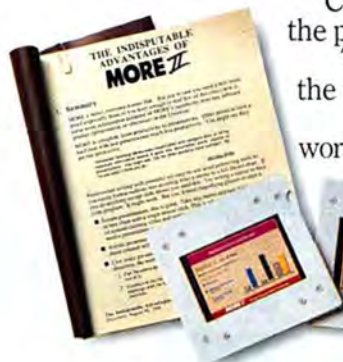
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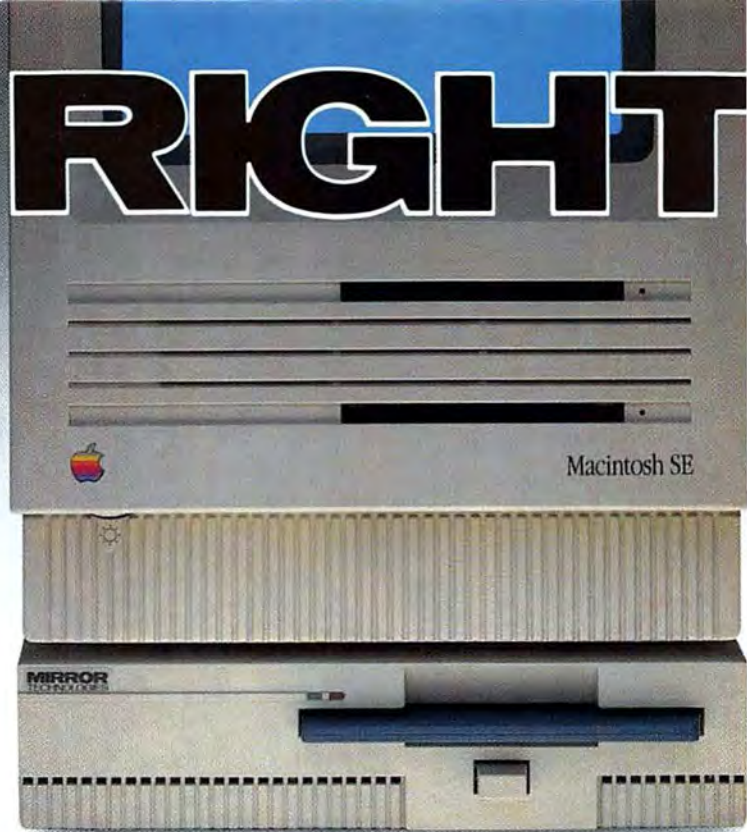
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Hypercard™ users – add fresh images to your stacks. Illustrator™ or Freehand™ users – scan in original templates. Because the VS300 saves files in all standard formats, it's the perfect "front end" for any Macintosh OCR (Optical Character Recognition) software. And because it can operate as a Desk Accessory, you needn't exit your primary application to use the scanner.

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# NUMBER -5294

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The VideoShow Executive has a 1.4-megabyte floppy drive that lets you run a presentation using only the Executive unit hooked up to an RGB monitor — no need for a Mac in the conference room.

## The Portable Presentation

General Parametrics VideoShow product line saves you the hassle of lugging your Mac off to the conference room for presentations. You might think of the VideoShow Companion and VideoShow Executive as stripped-down Macs tailored for boardroom presentations.

Both hook up to any Mac through either the SCSI or serial port and contain an Intel 80186 CPU and between 512K and a megabyte of memory (depending on the model). They can add color to presentations, even those created on an SE or Plus. What saves you from having to lug your Mac around is the Executive unit, with its 1.4-megabyte floppy drive. You just attach an RGB monitor to the Executive and slip your presentation disk into the drive. The Executive model also includes a remote unit.

With Companion (or Executive) hooked up to your machine, you use StarTime software to convert a presentation created with

any Mac presentation software to a VideoShow document; preview it (in WYSIWYG fashion); or change the colors, graphics, or text. StarTime also lets you move the images around and create program transitions, such as fades and dissolves. (It creates transitions on its own if you elect not to.) Once you're finished manipulating the presentation, StarTime converts it all into a VideoShow disk that can run on Executive.

VideoShow is the first product to bring color to the Plus — an RGB monitor plugs into the Companion or Executive, which is hooked up to the Plus. VideoShow Companion (with 512K of memory) sells for \$1,795; Executive sells for \$2,695 (640K version) and \$3,995 (1-megabyte version). The StarTime software package is available separately for \$199. For more information, contact General Parametrics, 1250 9th Street, Berkeley, CA 94710; (415) 524-3950.

— Kristi Coale

## Tables by Mansfield

If you've ever tried building a table in a word processor or spreadsheet, you know how messy things can get. That's why Mansfield Systems has introduced TableTools, a dedicated table editor.

TableTools is specifically designed for the construction of tables, and its feature list is huge. It supports page sizes up to 50 inches x 50 inches. It contains a complete word processor, so every cell in the table can be formatted like a separate page. Cells can be grouped and selected vertically, horizontally, and discontinuously.

Text can be cut, copied, and pasted into several locations simultaneously. For fast formatting, the system supports 254 text style sheets and 254 cell style sheets.

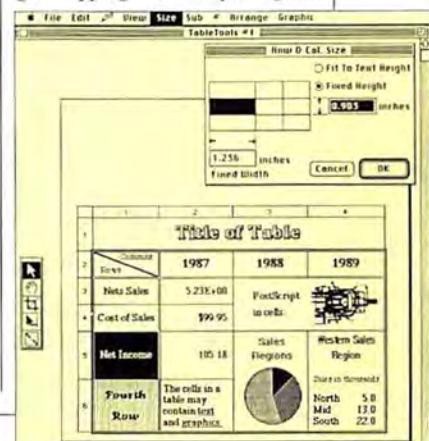
You can insert just about anything you want into the cells themselves, from graphics created in programs such as MacDraw, Illustrator, MacPaint, FullPaint, and Cricket Graph to numbers and formulas from Excel. Best of all, using TableTools' From Within Shuttle function under Multi-Finder, you can make changes in the original material, and when you save it, the cell contents in TableTools will update to reflect your changes — whether you're working with a graphic or numbers.

TableTools is fully compatible with all of the major page-layout programs, including PageMaker, ReadySetGo!, and QuarkXPress.

Mansfield was expected to begin shipping the \$395 package in

March. To find out more, contact Mansfield Systems at 550 Hamilton Ave., Suite 150, Palo Alto, CA 94301; (800) 872-3332, or (800) 367-3332 (in California).

— Russell Ito



TableTools lets you create remarkably complex tables easily. Each cell can be formatted like a separate page and can contain text, numbers, Excel formulas, or graphics.



## New Beginnings for CADD



Origins's rendered view shows some of its special talents: color, hidden surface removal, shading, mixed wire frame and solids, and transparency.

Origins is a design package that combines fast solid modeling with the accuracy and numerical annotation necessary for effective CADD (Computer Aided Drafting and Design). The program is *point-oriented*, allowing editing down to the level of vertices, essentially the smallest editable element of a solid. Among its strengths are the ability to construct moldable surfaces and to do *active* modeling in both 2-D and 3-D modes. Best of all, Origins is built for speed, so that ordinarily slow effects, such as rotation of objects and visually flying through models, occur closer to real time than to geological time.

To help with the tedious aspects of CADD, Origins offers automatic dimensioning. The program automatically updates and redraws extension and measurement lines associated with an item when the item changes. Your work can be distributed over 256 separate layers, enabling you to isolate parts of your model, which simplifies the definition of complex structures. And you can work

on your model from four simultaneous viewing angles. A keyboard-entry option lets you specify exact values for various operations.

The package includes a two-way PICT translator, which allows it to import 2-D PICT files and export 2-D versions of 3-D models. Origins runs on models from a Mac 512KE on up. The Novice Level is priced at \$495 for the black-and-white version and \$595 for color. Slated for the second quarter of 1989 are a DXF/IGES file translator (\$295), a plotter driver (\$249), and five symbol libraries (\$125 each).

Origins Professional Level will be released in the third quarter of 1989. It will use NURBS (Non-Uniformly Regulated Beta Splines) geometry, which is the most accurate system currently available, and it will work with a simultaneously released CAM (computer-aided manufacturing) package. For more information, contact Deltasoft, P.O. Box 55089, Tulsa, OK 74155-5089; (918) 250-5594.

— Salvatore Parascandolo

## NEWS LINE!

EDITED BY GIL DAVIS

### Lower-Cost Mac, Printers Coming

CUPERTINO, CALIF. — Apple is developing an entry-level Mac to be priced at under \$1,000. According to Apple vice-president Jean-Louis Gassée, speed won't be one of this new Mac's virtues when it is released in the early 1990s. Gassée also revealed that Apple is designing a color printer and a lower-cost monochrome laser printer.

### 1.2 Million Transistors on '040 Chip

AUSTIN, TEXAS — Motorola is developing what it claims will be the fastest Complex Instruction Set Computer (CISC) chip on the market when it releases the 1.2-million-transistor 68040. This chip boasts a fourfold increase over the 300,000 transistors on the 68030 chip used in high-end Macintoshes and offers substantially more computing power than the 1-million-transistor Intel i860 chip that will be used in the next generation of IBM PCs. The '040 chip — which will be compatible with the earlier members of the 680X0 family used in existing Macs — is expected to be used in Mac accelerator boards and new Mac models of the 1990s. It features a built-in IEEE-compatible floating-point unit, an improved integer unit, and a greatly expanded cache and will support multiple execution units. Pricing, speed, and availability are set to be announced in the third quarter of '89.

### Apple Wins First Part of Lawsuit

SAN FRANCISCO, CALIF. — Apple won the first phase of its lawsuit against Microsoft and Hewlett-Packard when San Francisco District Court Judge William W. Schwarzer ruled in March that Windows 2.03 was not part of the 1985 Apple/Microsoft agreement giving Microsoft the right to develop Windows 1.0. In this case, Apple may have dealt a major setback to Microsoft and IBM's efforts to urge developers to write applications for Windows 2.03 and OS/2 Presentation Manager by obtaining a court decision questioning the legality of both graphic interfaces. Apple's suit now enters the last phase with Apple attempting to show that Windows 2.03 and HP's New Wave infringe on Apple's copyrights.

### Eddy Update

NEW YORK, N.Y. — The computer industry is like the NBA: it's fast-paced, and you need a sense of where you are. Those who attended the Eddy awards ceremony in April may have noticed a few changes in the starting lineup:

"Best New Storage System" went to Syquest for its removable hard-cartridge drive. Many firms, first led by Mass Micro and PLI, market the drives under their own name. These two pioneers shared the award with Syquest.

In the Add-In Board category, Irwin Magnetics had acquired the rights to MacPEAK's Orion SE25, an add-in accelerator board, and had given it a new moniker: Excelerator XL25. So Irwin Magnetics got the trophy.

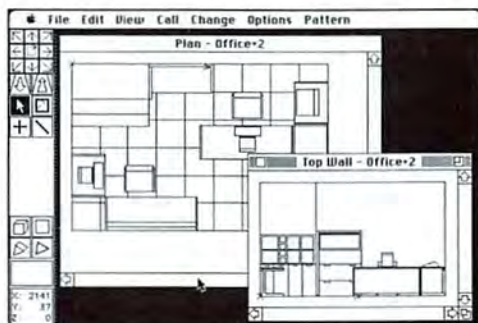




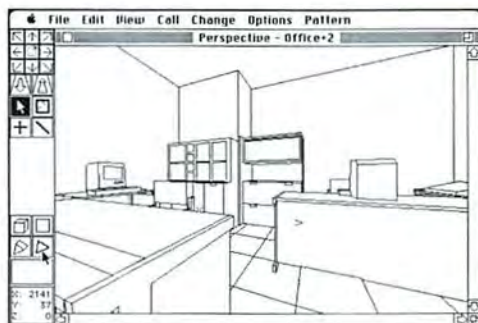
## 3D Interior Design and Space Planning for the rest of us.

Now for the price of a typical 2D package, you can get your hands on one of the hottest 3D design and layout programs for the Macintosh. Work in several different views. See your design in perspective and birdseye, then print it out on your laser printer, or use MacPlot to run it out to a plotter. With MacInteriors special object library it's a snap to design a room, a house, an office or even the newest addition to the Acme Widget factory. **\$295**

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MacInteriors is a trademark, and MacPlot is a registered trademark of Microspot Ltd. Macintosh is a trademark of Apple Computer.



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## NEWS LINE!

### Sun Challenges Mac with Two New Machines

MOUNTAIN VIEW, CALIF. — Sun Microsystems has introduced a pair of computers to challenge both Apple and IBM. The SPARCstation series (which supersedes the Sun 4/ line) uses the company's high-performance SPARC RISC chip in a UNIX-based desktop-computer system priced from under \$10,000. Sun claims its entry-level SPARCstation 1 machine can deliver up to 12.5 MIPS of performance, at lower cost and with fewer chips on the motherboard than a Mac II, an IBM Model 30, or a NeXT machine.

Sun claims its other new machine, the 68030-based 3/80 workstation, is faster than Apple's Mac IIcx running A/UX. Sun says it also beats the Mac IIcx with an expected price of \$8,230 for 4 megabytes of memory, 104-megabyte hard drive, 17-inch monochrome monitor, built-in Ethernet, one slot, and Sun's version of the UNIX operating system. Apple's Mac IIcx lists for \$9,479, complete with 4 megabytes of memory, 80-megabyte hard disk, 15-inch gray-scale monochrome monitor, three slots, and A/UX operating system that runs both UNIX and Mac applications.

Sun claims its 3/80 runs 2,100 UNIX-compatible applications and that the SPARCstation series will run many of these with a simple recompile. But these expensive programs with widely different user interfaces will be harder to learn than Mac applications.

### Speaking Out: Will UNIX Challenge the Mac?

As Apple's high-end Macintoshes — including the new IIcx and SE/30 — begin to lock horns with low-end UNIX-based workstations, who's going to win and why? We asked industry leaders to venture a few predictions:

"I think it's going to be a world of coexistence, with the Mac and Sun each having their own domain. But the competition to look out for is Sony and NEC."

— John Gage, director of science, Sun Microsystems

"Apple is winning because it's forced programmers to develop a standard interface for applications. But it's now possible to take advantage of UNIX's large and diverse software base by overlaying each program with one graphical interface."

— Hugh Daniels, cofounder of Grasshopper Group

"UNIX runs on multiple platforms, so it can rapidly exploit technological improvements such as RISC computers. The Mac's big advantages are its graphical interface and application base, which are leaps and bounds ahead of UNIX."

— Rusty Rahm, President of StarNine Technologies

"A/UX is the best of both worlds because people can switch between Mac and UNIX programs without re-booting."

— Bill Jacobs, A/UX product manager, Apple Computer



# MACINTOSH ANALYST

In last month's column, I noted the growing effort on the part of Microsoft and IBM to persuade Macintosh software developers to turn their attention and resources toward Windows and the OS/2 Presentation Manager. Since writing that column, I have seen strong additional evidence of just how serious a threat that may be to the Mac.

Witness the presence, for example, of key players from IBM's Desktop Software business unit at the most recent *MacUser* Marketing Conference. Five top managers from IBM, including IBM Desktop Software General Manager Fernand B. Serrat, attended. Both Serrat and IDS acquisitions head John C. Merson frankly acknowledged their interest in Mac software products that could be ported to IBM's OS/2 Presentation Manager graphic user interface. What's more, and what's uncharacteristic of IBM in the past, they were equally interested

in seeing Mac software ported to Microsoft Windows.

Even a brief conversation with these

Mac software developers. Total 1988 PC/MS-DOS software sales, at \$2.2 billion, are 6.6 times greater than the \$334 million sales of software for the Mac.

But by far the most damaging data for the Mac can be found in the languages/tools category, where it was reported that Mac software sales plummeted by 58.1 percent, while PC/MS-DOS languages/tools software sales grew by 46.8 percent. The numbers strongly suggest that developers are turning away from the Mac faster than had previously appeared likely.

The SPA data, taken together with the previously noted efforts by IBM to encourage Macintosh developers to move to Windows and/or the OS/2 Presentation Manager, point to the possibility of a major crisis for Apple and the Macintosh. What's more, none of this takes into account what might prove to be an even more serious challenge to the Mac: the movement of high-end, UNIX-based workstations onto the terrain of business desktop computers.



## The Challenge of UNIX

folks was enough to convince me that a new breeze is blowing through at least parts of IBM. IBM Desktop Software clearly has a charter to be quite

independent in seeking out great software that can help sell IBM hardware, even if it runs on Microsoft Windows rather than on OS/2. IBM has assigned some top-notch executives to this effort. Serrat and his staff have done their homework regarding the Mac and its software and are eagerly learning more.

Yet another indication of just how serious a threat the growing use of the Windows/Presentation Manager graphic user interface may be to the Mac can be seen in the Software Publishers' Association (SPA) Software Sales Report for 1988. The good news is that total Mac software sales grew by 63.4 percent from 1987 to 1988 while PC/MS-DOS software sales grew at a lower (though still very strong) 44.5 percent rate. Mac software in the categories of education, graphics, and desktop-publishing, in particular, far outstripped PC/MS-DOS software sales growth. Mac software sales growth in spreadsheets and word processing also fared well compared with PC/MS-DOS, although from a much smaller base.

Unfortunately, however, that's about as far as the good news goes. The first trouble area is database software, a key category for developing more sophisticated business applications. PC/MS-DOS database-management-system software sales increased by 62.9 percent while Macintosh software actually declined by 4.3 percent in the database category.

The SPA numbers also leave little room for doubt about why IBM-and-compatible systems offer a serious temptation for

While there has been much discussion of the threat that UNIX-based workstations may pose to IBM-and-compatible systems and to OS/2, for some reason relatively little attention has been given to the threat that these systems may pose to Apple and the Macintosh. On the contrary, one more typically reads about how Apple, with A/UX, may be poised to carve out a piece of market share from the workstation vendors. In reality, however, the danger may be much greater in the opposite direction.

Powerful workstations built around fast new RISC-processor architectures such as Sun's SPARC, MIPS, the Motorola 88000, and now Intel's i860 not only are coming down in price but also are routinely making use of Macintosh-like graphic user interfaces. They are certain to collide directly with Apple's efforts to move toward more expensive high-end systems. More importantly, however, they are far more likely to provide an immediate challenge to the Macintosh than to OS/2 systems. The Mac, in effect, occupies the territory between workstations and IBM-and-compatible systems.

If RISC-based workstations gain ground, it's likely that it will initially be from the Mac. IBM's efforts to woo Mac software developers, the realities revealed by the SPA numbers, and the challenge from less expensive workstations add up to what may be the most serious threat to the Mac since its early crisis days in 1985. It's a threat that Apple can ill afford to ignore.



BY WILLIAM ZACHMANN



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## Truvel's Zebra — A Sharper Line

Scanners can be finicky creatures. Sometimes they'll register a line-art image correctly; sometimes they won't. Most scanners read a line based on a fixed line weight for the entire image, so if a particular line falls below this value, it isn't read. Recognizing that this one-size-fits-all approach isn't necessarily the best way to handle line-art scans, Truvel has introduced Zebra, an image-processing board for line-art scanning that provides a floating, dynamic threshold.

Instead of looking at line weight, Zebra bases its clipping point on changes in gray-scale value — as little as six percent. Using this method, Zebra can recognize lines that are actually smaller than the scanner's optical pixel resolution.

And since Zebra's processing occurs in hardware, you suffer no loss of speed.

Zebra installs only in Truvel's scanners and lists for \$995. To find out more, contact Truvel, 8943 Fullbright Ave., Chatsworth, CA 91311; (818) 407-1031.

— Russell Ito



Truvel's Zebra image-processing board is designed for line-art scans on their scanners. Because the Zebra board offers a floating, dynamic clipping level based on gray-scale changes (as low as six percent), it can resolve much finer lines. Both of these images were scanned at 600 dpi and printed on a Linotronic 300 at 1,270 dpi. The graphic on top was scanned with the Zebra; the lower one was scanned in Line Art mode with a threshold of 127.

## Program- ming for 8-Bits

Programming the 8-bit micro-processors in cars, microwave ovens, alarm systems, and even the Mac's mouse has always been a bit of a pain. Cross assemblers on the PC are slow, and editors are clumsy to get into and out of. Not anymore, according to Onset Computer, maker of Crossbow, an integrated package that lets you do assembling, editing, and testing all at once.

Crossbow covers the most important simple 8-bit processors. You can open up to eight windows, which means you can view different parts of the code simultaneously and cut and paste code. Other features include search and replace, macros, a wide choice of output formats, and terminal emulation (which can run in the background) for communicating with your code after you've downloaded it. There is also on-line help in the form of a HyperCard stack that includes 300 cards for the 6800 series alone.

Crossbow is fast, assembling at

30,000 lines of code per minute on a Mac II. Onset says that what normally takes five minutes on a PC (in BASIC) takes three seconds with Crossbow on a Mac.

Onset, a producer of industrial controller boards, began Crossbow as an in-house assembler for the 6800 series, such as the 68HC11, used in automobiles. The company has been expanding the product to a score of other processors, including the Motorola COPS, the General Instruments PIC, and the Intel 8031 and 8051. A one-year free upgrade lets all users benefit from the expansion.

Onset is putting its money where its mouth is when it claims that Crossbow is the best assembler on the PC or Mac. It's offering a 30-day unconditional money-back guarantee and a one-year performance guarantee. Crossbow requires 2 megabytes of RAM and retails for \$295. You can reach Onset at 199 Main St., N. Falmouth, MA 02556; (508) 563-9477.

— John Rizzo

The floppy is dead! Long live the floppy! Peripheral Land's TurboFloppy offers 1.4 megabytes of diskette storage on a 3.5-inch diskette.

## Floppy Drive Redux

As the price of hard-disk storage has dropped over the past few years, more than a few users have been heard sounding the death knell of the floppy drive. But just when it looked like floppy drives were finished, Apple introduced a high-density 1.4-megabyte unit, and now Peripheral Land has done the same with its 3.5-inch, 1.4-megabyte floppy drive.

The TurboFloppy can read and write disks in 1.4-megabyte (Apple or IBM) or 720K (IBM) for-

mats. Although it can read Apple FDHD formatted disks, they must have been formatted as 1.4-megabyte disks. Unfortunately, the TurboFloppy can't read or write in 800K format.

This SCSI device comes with PLI's TurboCache caching software and lists for \$395. The drives are available from Peripheral Land, Inc., 47800 Westinghouse Drive, Fremont, CA 94539-7469; (415) 657-2211.

— Russell Ito





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## Disc o' Campaign

The '88 campaign may be over, but that doesn't mean that it's stopped generating news. In fact, it's actually helped launch a new industry. ABC News has just spun off a new division, ABC News Interactive, that, in conjunction with Optical Data, has just released its first interactive videodisc package, The '88 Vote.

ABC News Interactive marks the first time that any of the networks has become involved in interactive media, and The '88 Vote takes advantage of the relationship with its parent company. The single 12-inch videodisc contains material from ABC News' coverage of the last presidential campaign. Included on the disc are the various candidates' announcement and withdrawal statements; highlights from both conventions as well as the presidential and vice presidential debates; statements from Dukakis and Bush on the issues; the candidates' television commercials; and election night coverage. As you might expect, Peter Jennings anchors the

material, with political editor Hal Bruno providing additional analysis on a second sound track. The disc comes with a HyperCard stack controller that's similar to the one developed for Jennings' use during the campaign.

The '88 Vote lists for \$295 and is being distributed through Optical Data. To find out more, contact Optical Data at 30 Technology Drive, Warren, NJ 07060; (201) 668-0022.

— Russell Ito

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	<b>Primaries &amp; Caucuses</b>		<b>Peter Jennings About Side 1</b>

## The Joy of Connecting

The continuing integration of the Macintosh into the mainstream management information system (MIS) world takes another step with the release of MacIRMA Graphics from Digital Communications Associates of Alpharetta, Ga. Available as a software upgrade for current users of the MacIRMA family of IBM 3270 terminal-emulation products, MacIRMA Graphics is designed to

give Macintosh users access to mainframe computer-graphics applications that are controlled by IBM's Graphical Data Display Manager.

These applications include TELLGRAFF, SAS/GRAPH, and Interactive Chart Utility. A copy-and-paste function enables users to easily transfer graphics that were created on these programs to Macintosh programs such as Mac-

Draw for modification.

MacIRMA Graphics is available in a combined hardware and software version for \$1,295. Current MacIRMA users can purchase it as a software upgrade for \$195. For more information, contact Digital Communications Associates, 1000 Alderman Drive, Alpharetta, GA 30201-4199; (404) 442-4000.

— James Bradbury

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# The Well-Appointed Groupie

Users used *groupware* even before the buzzword existed. For those who collect such trivia, groupware is the class of software that lets a group of people accomplish a task together over a network — E-mail and multiuser databases are good examples, and so is Perfect Timing, a new network group scheduler and desk accesso-

ry available from Imagine Software.

Perfect Timing differs from the typical appointment diary in that it can coordinate individual calendars on a network via its server software (used by itself or over an AppleShare or TOPS network). You simply click on a handshake Schedule icon and get a list of ap-

pointment books active on the network.

You drag the books you want to coordinate into a composite group to see how they mesh. To schedule a new meeting, you drag a desk pad over the time you want, and each user in the would-be group is notified. Their yeas or nays show in your calendar as checks or X's.

Perfect Timing gives you several views of your personal diary. A main screen shows you three miniature calendar months at a glance, and provides a larger view on the current workweek. You can browse through both months and weeks.

Double-click on a day on the active month, and you can see the whole day broken into the sub-hour segments that you've defined. Click a pointing finger at the beginning of a week (or above, say, all Wednesdays), and you get an overview of that week or string of days shown as a collection of desk pads as in the composite schedule. You can print out your schedule for just those days with meetings or for all days in the period.

As of this writing, Perfect Timing is targeted at around \$395 for a 5-node kit or \$595 for 10 nodes, with site licenses available for networks of 50 or more nodes. Contact Imagine Software, 19 Bolinas Road, Fairfax, CA 94930; (415) 453-3944.

— Michael Miley



Perfect Timing's main screen gives a user access to three months' worth of schedules at a glance, with appointments for each workday listed. A future version will show all seven days.

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Double Helix II: \$595 List

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## Name That Place

Last week I didn't know where or what Ningxia was. Now I do. (It's a province in central China.) And I even know that its capital is Yinchuan and its population is 3,895,578. These and other facts are available in a geography package, Atlas Explorer, from Springboard Software.

Atlas Explorer contains a selection of maps that cover the world. There is information on every country in the world plus data on smaller divisions of some countries (the republics of the USSR, for example). Information on countries includes name, area, population, capital, currency, lan-

guage, and a list of major cities. State and province information includes name, area, population, and capital.

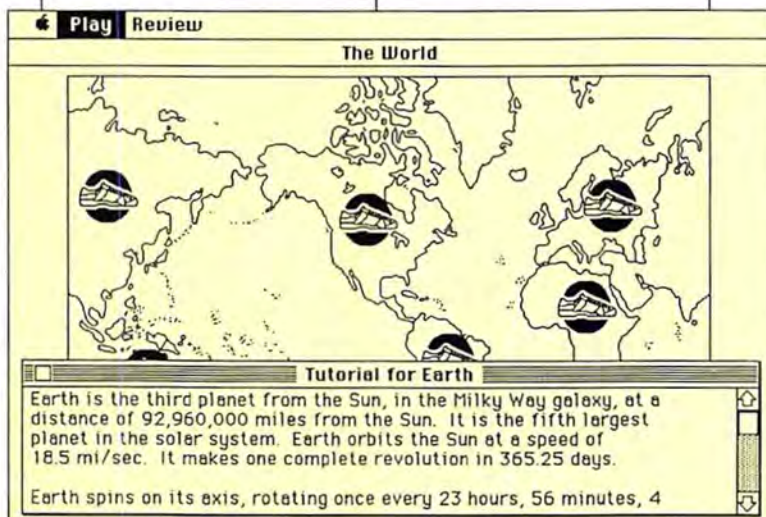
There are three levels on which you can use the maps — the Explorer mode, the Atlas Explorer Tutorial, and a quiz. In Explorer mode you can tour the world,

clicking on maps of continents, countries, and states to get their names. Select the Tutorial mode to get information about the places that appear on-screen.

The quiz feature lets you test yourself on what you've learned. You can select the number of questions you want in a session, whether you want a second chance, the type of question you want to be asked (locations or general facts), and the geographical level (country or city) you want to be quizzed on. Also, you can record test results (good for teachers), review test questions, and re-take the quiz. In addition, mastery icons appear on the world map, indicating your progress in mastering the information. There are five levels of knowledge — from Provincial (less than 25 percent correct), whose icon is a shoe, to Explorer (100 percent correct), represented by a compass.

Atlas Explorer sells for \$49.95. Contact Springboard at 7808 Creekridge Circle, Minneapolis, MN 55435; (612) 944-3912.

— Laura Johnson



This is Atlas Explorer's first screen, with the Tutorial mode selected. You click on a country to get to its tutorial.

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## Memory on Demand

You have a Mac II, plenty of hard-disk space, and dozens of applications that you want to run simultaneously under MultiFinder. But buying 8 megabytes of memory is still too costly, so you have relegated your desires to the world of dreams. It's time to stop dreaming. Connectix has a solution: Virtual, a software/hardware package that gives any Mac II 8 *virtual* megabytes of memory.

In this virtual memory system, the Mac is tricked into thinking that it has 8 megabytes of RAM. In reality, these 8 megabytes are stored on your hard disk, and 2K-sized segments, or pages, are swapped in and out as required.

Some hardware support is needed to handle the translation between RAM and disk addresses. Virtual requires the Motorola 68851 Paged Memory Management Unit (PMMU) chip, which works as a coprocessor to the Mac II's 68020. Connectix sells the software and the chip together for

\$695, or, if you already have a PMMU, you can get the software alone for \$259. The Virtual software is an INIT that you simply put in your System folder.

Page swapping can dampen performance, but Virtual will work well in typical uses such as running multiple applications under MultiFinder. If each application has a MultiFinder partition well under the amount of available RAM, things should run swiftly except for a slight delay when switching between applications. Virtual is less well suited for real-time animation and sound, and will not work at all with boards that bypass the 68020 — a direct memory access (DMA) board, for example.

In a move that may help push this technology along, Apple has announced its intention to release a 32-bit version of the Macintosh operating system this year. Since 68020-based machines will require a PMMU to take advantage

of the software, and since Apple charges \$499 just for that chip, Virtual's \$695 price can be viewed in part as an investment in the future.

Connectix is working on a version of Virtual for the 68030 chip of the Mac IIx and the new SE/30.

Since the 68030 already includes memory management, no PMMU is required. The 68030 version should be shipping by the time you read this. Contact Connectix, 125 Constitution Drive, Menlo Park, CA 94025; (415) 324-0727.

— James Finn

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— Kristi Coale

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# RUMOR MANAGER

 Most versions of Apple's Operating System of the future (MacSys II and Boca are two of the names we've heard — although some engineers have taken to calling it FinderEE, for Extended Edition, a spoof on IBM's multimegabyte OS2/EE) have surprisingly (to us) complete E-mail hooks built-in (well, we guess we shouldn't be surprised, considering the number of E-mail product-management, engineering, and programming jobs Apple has placed ads for in Silicon Valley newspapers recently). The E-mail hooks are mostly in the System (which, by the way, will no longer be called the System — at the moment the leading new-name candidate is Main Module or just Main). However, the Finder-like application (leading new-name candidates: Manager Module, Desk Module, Desktop Module, and any of the above without the word *Module*) currently has no way of accessing any built-in E-


mail application.

Some highly favored developers who are already working with parts of Boca say they've been told all about the upcoming E-mail capabilities and have been given some pretty specific instructions on how their programs should access them.


 Expect, very soon now, not one, but two laptops from Apple. No, they haven't decided the "Will it be a 68000-powered machine, or will it be a 68030 machine?" quandary by deciding to bring out both. We frankly admit a rare moment of confusion on that subject and have no real data on whether Apple will go 000 or 030. What we can say is that both machines will use the same CPU and be differentiated by their weight, size, memory technology, and hard-disk capacity. One will be designed to be carried and then used in distant places. That's the one that's become infamous as Laguna. It will weigh about 15 pounds,


and you wouldn't care to leave it on your lap for long. The smaller machine (the code name leaked to the Rumor Manager is Lodi) is much smaller, roughly the size and weight of the 4.4-pound NEC UltraLite. This machine is the one you'll want if you plan to use your Mac in moving trains, planes, and automobiles. The Lodi memory, screen, and power technology is basically similar to that in the NEC, similar enough for us to think Apple and NEC are working together on this project. Don't worry, though — Lodi is a real 68020-powered Mac.

We also hear that the reason you haven't heard about this laptop before is that all the development is being done in a heavily guarded lab in Japan. That should certainly cut down on leaks.

 While we're on the subject of laptops, we have evidence that Apple has been funding some advanced power-cell research in the hopes of finding a new lighter

power source for the laptops. At least three projects have been funded, all in American universities, and they've been told that only some (or one) will get funded next year, the decision depending on this year's results.

 Have you heard any good rumors recently? Started any yourself that you'd like to take credit for? Can you share your "knowledge" with us? Does your legal department agree? Will you share anyway? If we use your rumor, we'll send you a token of our appreciation and promise not to use your name. Anonymous contributions are also accepted.

Our U.S. Mail address is Rumor Manager, c/o MacUser, 950 Tower Lane, 18th floor, Foster City, CA 94404. Our electronic addresses are MacUser (on MCI Mail), 74206,420 (on CompuServe), and X0259 (on AppleLink). No calls, please; the Rumor Manager has an unlisted number and much prefers it that way. 

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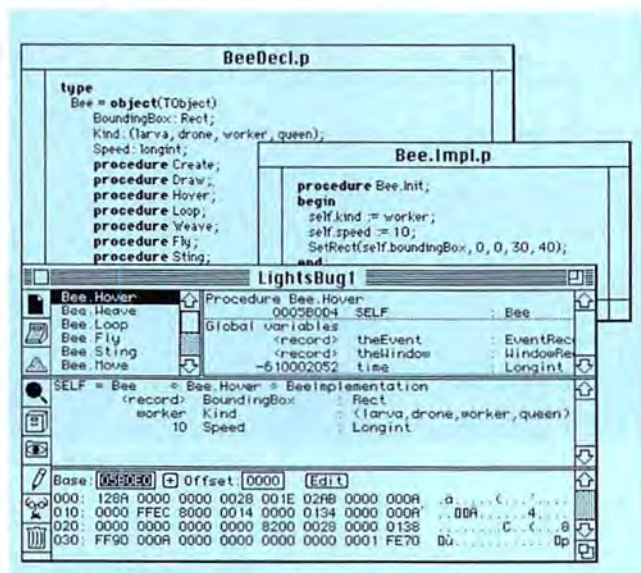




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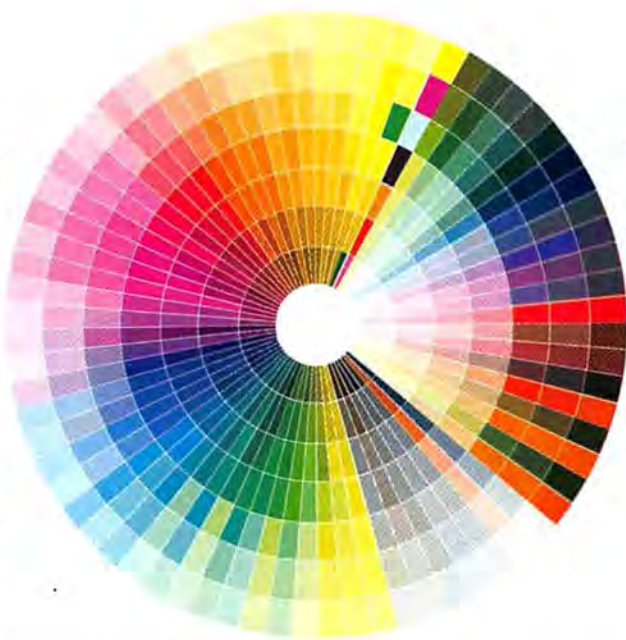
## GRAPHICS

### FreeHand 2.0

Since the introduction of Aldus FreeHand 1.0 and Adobe Illustrator 88, the search for the best PostScript drawing program has been a confusing one. Enter FreeHand 2.0, a major upgrade that seems to be the best of both worlds — the niftiest ideas from Illustrator 88, plus improvements on some of FreeHand 1.0's features.

The Undo command is a good example of FreeHand 2.0's increased power. Previously, the largest number of possible consecutive Undos was 8. FreeHand 2.0 allows a whopping 100 levels of Undo. Of course, FreeHand will eat up more RAM as the number of levels increases, so you can specify how many levels you want. (Aldus recommends that the number of Undos remain at the default of 8 if you have 1 megabyte.)

The FreeHand interface has had some cosmetic surgery as well. The menus and dialog boxes have been changed to make them more like those of FreeHand's text-processing coun-



FreeHand 2.0 isn't really easy to learn, but once you've got the hang of it, it's relatively easy to use. As part of its increased power, FreeHand now supports the Pantone Matching System. This color wheel was created in FreeHand and lets the user precisely match screen colors to their CMYK equivalents.

terpart, PageMaker. This small concession to consistency should help you find your way around when switching between the two programs.

It's a good thing the user interface is easy to grasp, because you're going to need all of your brain power and attention span to master this program's numerous features. Fortunately, Aldus' documentation is not only exceptionally clear and well organized, but it's also well designed. FreeHand comes with 45 days of free tech support (beginning with your first call) and an option for additional time for a fee. With a package that is this complex and expensive, the tech support should be free — period.

FreeHand 2.0's new features are likely to give Illustrator 88 users a sense of déjà vu. All of the best features of the latter program are now part of FreeHand: a Knife tool for cutting paths, a Trace tool for auto-tracing illustrations, a Magnifying Glass tool for enlarging or reducing the view of your illustration, a Blend command for interpolating shapes or colors, and options for varying letter stroke and fill. You can open Illustrator files —

provided they've been saved in Illustrator 1.1 format (EPSF) — as well as TIFF, PICT, and paint-program documents.

The new Trace tool automatically traces a FreeHand illustration, or you can use it to trace a scanned picture or paint-program image. Trace converts paint pictures into draw pictures and puts down the requisite control points that allow you to work with the image as if it were a regular FreeHand-created illustration. It doesn't do a perfect job of tracing, however — it gets confused by little things like colors and shades of gray. Fortunately, FreeHand provides a simple method for converting paint and scanned images to black and white, which Trace has a much easier time with. Also, you can go in and clean up the lines of a traced image and delete any redundant control points — but that can be an arduous task.

Using the Blend command is like tweening in animation, even though you're not animating anything. To use Blend, you create two key drawings — the starting shape and the ending shape (called *first blend* and *second*

#### The Five-Mouse Rating



EXCELLENT



VERY GOOD



GOOD



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## Quick Clicks

*blend* in FreeHand parlance) — and specify how many steps you want to take between them. FreeHand then draws the intermediate shapes for you. The command works with any path created with one of the freehand drawing tools and can interpolate fills and colors as well.

**F**reeHand

2.0 is relatively easy  
to use, once you become  
fluent in it.

Perhaps the single most important addition to FreeHand — if you want to work with color — is the Pantone Matching System. Pantone Colors (a set of more than 700 colors that assure the closest possible match between the color a designer wants and the color a printer comes up with) are a printing-industry standard that makes using color with FreeHand a much more exact process than it has been. And since the colors you see on your Mac screen are not necessarily "true" colors, FreeHand 2.0 includes a Color Monitor Adjustment Card to help you color-balance your monitor.

A bit of good news about working with text in the new FreeHand is that it now has stroke and fill control, which means it's as easy to apply graphics to your text as it was to apply text to your graphics in 1.0. It also means that decorative drop-caps just got a lot easier to create. The bad news is that only the fill color shows up on your screen, not the stroke (outline). To see the filled letters with their specified outlines, you have to print out proofs on a laser printer.

Designers are frequently called upon to make visual statements with text. FreeHand lets you deal with text as if it were just another graphic element of your design, and it gives you a plethora of special options with which

to manipulate your type: kerning; leading; tracking; baseline shifting; and mixing fonts, styles, and sizes in a single block of text, to name just a few. You can get creative with type without having to draw your letters from scratch. All these text features add up to an ability to do just about anything to type that you can do to shapes: you can skew, reflect, scale, rotate, move, clone, and align blocks of text and apply color to them the way you'd use these features on any other graphic element. You can also squash, stretch, and rewrap text and adjust letter or word spacing by dragging the boundaries of the text block around with the mouse while holding down various configurations of the Shift and Option keys.

FreeHand 2.0 does suffer a bit from "creeping functionality," but any piece of software that lets you have a great deal of control over a complicated process (in this case, prepress production) is going to be fairly complicated. That means a pretty steep learning curve until you start to get the pattern of how the program works.

You're not going to learn this program overnight. But "easy to learn" and "easy to use" are two different things, and FreeHand 2.0 is relatively easy to use once you're fluent in it. Perhaps most importantly, it is flexible and powerful enough to give the degree of control necessary in the real world of layout and design.

— Levi Thomas

### Aldus FreeHand 2.0

★★★★½



List Price: \$495

Published by: Aldus, 411 First Ave. S.,  
Seattle, WA 98104-2871; (206) 622-  
5500.

Version: 2.0

Requires: System version 4.3 (or later)  
and Finder version 6.0 (or later).

Compatibility: All Macs with 1  
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Application Size: 724K

Copy Protection: None



# Panorama

Panorama is a direct descendent of OverVUE, a very fast and intelligent flat-file database. OverVUE, whose data-entry screens looked a lot like spreadsheets, was a popular list manager, thanks to its ease of use and blazing speed. Panorama keeps the spreadsheet-like basic data-entry screens and adds a set of such enormously versatile and powerful features that it can compete with any flat-file database available. And it does all that without slowing down.

The spreadsheet metaphor makes data entry fast and intuitive. Panorama handles text, number, date, and graphic data types. You can create special fields that allow only limited values, which appear as radio buttons and require only a click for entry. Equations (with a huge range of possible operators) can link columns in the basic structure, thus creating calculated number, text, or date fields.

Data-entry speed and accuracy are enhanced by a feature aptly called Clairvoyance. Clairvoyance matches the data you are entering with already entered data — as you enter it — and finishes entries automatically when it finds a unique match. It never misses. If you don't want the match, keep typing and the guess will be erased and, if necessary, replaced. Overall, Panorama almost succeeds in making data entry a pleasure.

Database design in Panorama is a bit unusual and takes some getting used to. The basic screen is literally full of icons and has many columns to fill in. You have to learn the meaning of most of the icons; they're not at all intuitive. The reason that the design form is so complex is that most of the power features need enabling in this phase.

Database design is never easy, but the Panorama method seems overly complex. The best way to design a Panorama database is to find an example (the program provides many sample databases) or use one of your own already finished designs and clone the



Design Sheet, which holds the basic structure of the database. Then use the database-design tools to modify the Design Sheet to meet your current needs. Even if a great deal of modification is necessary, this approach is easier and faster than building from scratch. The first few databases I designed took far longer to create than I had anticipated, but building databases from templates soon became relatively quick, if not painless.

Among the data-entry power features are Input Pattern, which simplifies entry of fixed-format data such as dates and phone numbers; Range, which limits the kinds of data that can be entered; Caps, which automatically capitalizes words (or sentences or all text) as they are entered; and Tabs, which lets you use the space bar to advance to the next field or cell.

Fields can contain up to 32,767 characters each. Although only the beginning of a long field appears on-screen, you can view any field in its entirety by double-clicking on it.

You'll usually want to work with only a portion of your data. Panorama has numerous options for extracting just the data you want. You can, at the same time that you're sorting data, add subtotals (both regular and nested) and running totals to the screen reports.

You can collapse databases to any level desired and use cross tabs to analyze any column in your database against any other column. No other flat-file database offers that ability.

Reports were a major OverVUE weakness, and forms were something that other programs could do better.

Panorama has so many features and options that ordinary submenus aren't enough. Note the use of sub-submenus to allow the selection of user-created forms and templates.

Panorama changes all that. Forms and reports can now be enhanced with an exceptionally full-featured graphics editor. You have access to seven basic colors in any field, and graphics from outside sources can be pasted into any field. If they were full-color to begin with, they'll be full-color in Panorama. The Flash Art feature lets you tie data to pictures, which can be a real time-saver when you're creating reports.

Printing reports was another area in which OverVUE was somewhat limited and in which Panorama shines. The Print Preview feature shows you exactly what your output will look like — particularly useful for printing labels, which require expensive stock.

Printed reports can mimic forms, or they can be custom-built. Custom-building reports is easy, thanks to a well-designed set of dialog boxes, and all reports can contain graphics.

The built-in charting module is powerful and easy to use, much like a power charting module you'd expect in a spreadsheet program. You can use your data to create bar, line, pie, and area charts, as well as scatter diagrams. Any chart can be enhanced to presentation quality with Flash Art and Panorama's built-in tools.

Power users can link multiple files (and work with up to 25 open files at once), although Panorama isn't a relational database. One good reason to link files is so that Clairvoyance can use existing data, thus becoming even more powerful. The Lookup function lets you find and use data from any open file.

Users can also create and use powerful macros, recording and building



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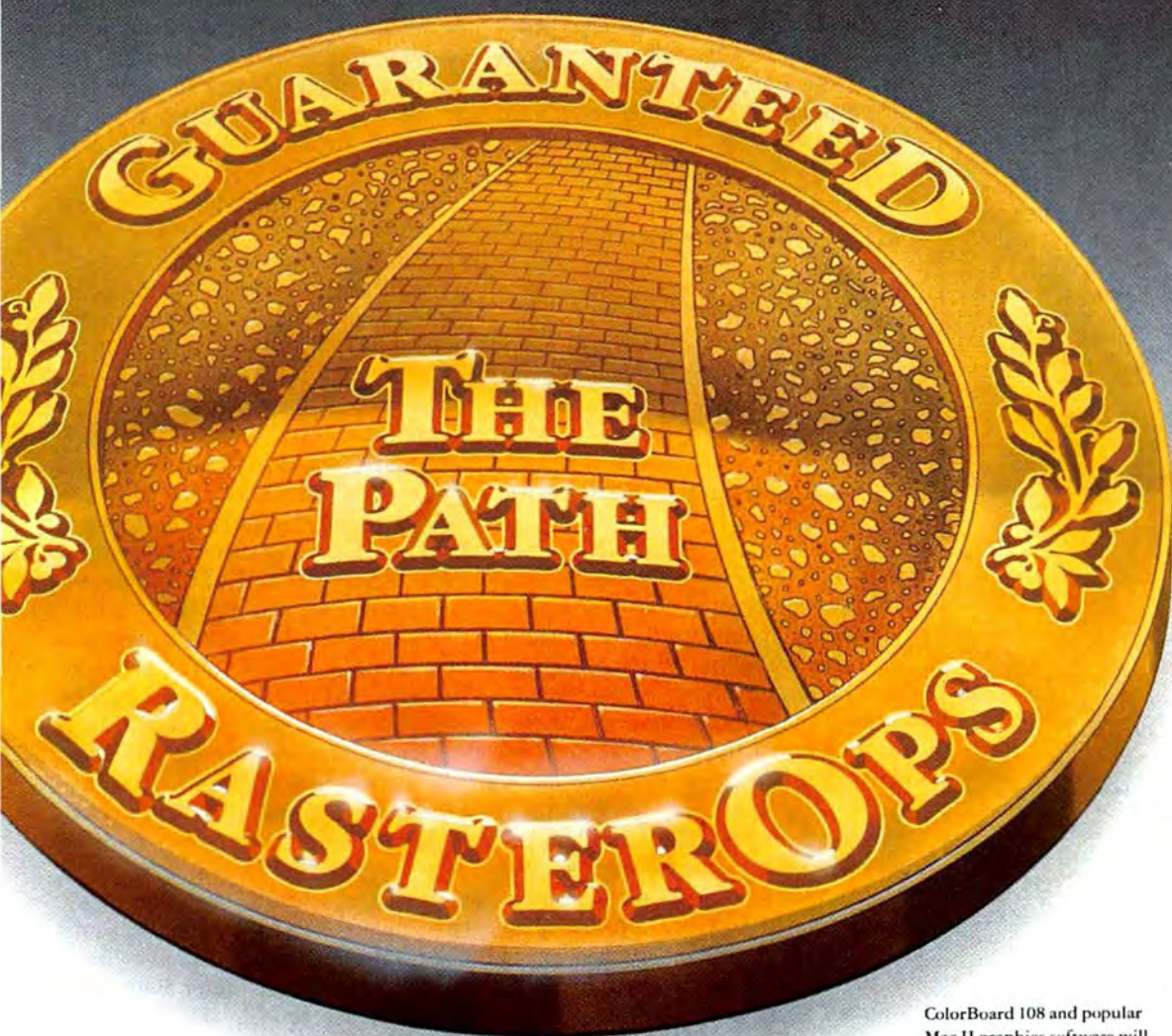
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## Quick Clicks

them automatically or in more traditional ways in a decent macro editor. The manual covers macros in great detail and provides many good examples to get you started. If you expect to get the most out of Panorama, you'll have to master macros.

**P**anorama would be the best flat-file database if it were just a little cleaner and a bit more thoroughly debugged.

Panorama-created files are exceptionally compact, mostly because of the basic structure of the program. You can elect to compress specific columns of data. Using the compression function correctly can save up to 90 percent of the space you'd normally use.

You can import data from and export it to most other databases and word processors. Some of the procedures can get involved, but they're all well explained in the manual.

Performance is outstanding. Panorama outraces every other flat-file database I've used, including File-Maker II. It's particularly good at sorting on a single field, but it doesn't allow you to sort directly on multiple fields (or criteria). Sorts do take into account the results of previous sorts, however, so you can search for multiple criteria or do multiple sorts. If you use the same set of multiple sorts repeatedly, it's easy to set up macros to automate the operation.

Panorama gets its great speed by keeping the entire database it's working on in RAM, which penalizes users with only 1 megabyte. They get the speed, but they can't work with very large databases. Since Panorama is fairly small, however, and since the files it creates are relatively small, you can use Panorama on small machines.

The large number of small and

unique icons throughout the program slows down new users, who often have to take the time to find the icons in the manual or help file. Fortunately, the help file (which is bigger than the program!) is very good, and once you've mastered the icons, Panorama is easy to learn.

The large manual is packed with everything you need to know about Panorama. It's well written but a bit disorganized. Some material that should be in the manual, such as System requirements and installation information, isn't. You can learn Panorama by using this manual — and it is a decent reference, mostly thanks to an excellent index — but it makes Panorama seem harder than necessary.

I experienced some operating problems, and the program crashed several times during evaluation. The data-entry portion seemed perfectly stable, though, and I never lost data because of a crash. The publisher is aware of the bugs, and a new version should be available by the time you read this.

Panorama is a power user's delight. It's also easy enough for first-time database users. Even at its high price, Panorama would be the hands-down best flat-file database if it were just a little cleaner and a bit more thoroughly debugged. And that manual could use a bit of polishing. But even with those complaints, I prefer Panorama to any other flat-file database now available for the Macintosh.

— Steven Bobker

### Panorama



**List Price:** \$395  
**Published by:** ProVUE Development,  
15180 Transistor Lane, Huntington  
Beach, CA 92649; (714) 892-8199.  
**Version:** 1.0  
**Requires:** Two 800K drives.  
**Compatibility:** All Macs with 1  
megabyte.  
**Program Size:** 320K; help file, 396K.  
**Copy Protection:** None



# Suitcase II

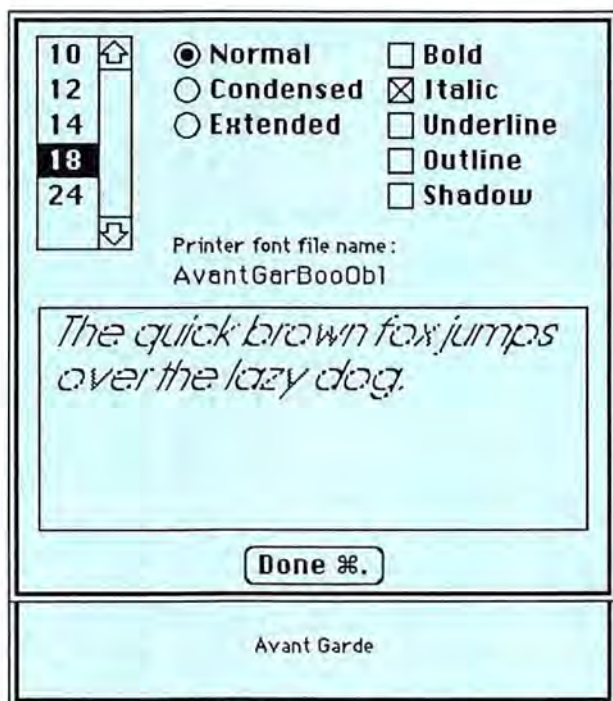
Sometimes success can be its own worst enemy. As anyone in show business knows, there's nothing tougher than following a hit. Take Suitcase, for example. The original was so good that it practically became a necessity. But now there's Suitcase II — which is even better. Unfortunately, the audience has become more sophisticated, so it's a lot harder to impress. Nevertheless, Suitcase II deserves to be a hit.

The biggest improvement in Suitcase II is in its increased file-management power. Rather than recognizing specific filenames such as Fonts, DAs, Fkeys, and Fonts/DAs, Suitcase II remembers any font, DA, sound, or Fkey file you open on any available disk and reopens it for you next time, regardless of its name. And assuming you have the RAM, you can now open up to 99 such files.

The original Suitcase displayed only desk accessories in the Suitcase DA window, but Suitcase II lists the contents of any font, DA, Fkey, or sound file if you click on the appropriate button.

When displaying fonts, Suitcase II shows you any font in an open font file in any size or style. Just select it and click on the Show button or double-click on the font name. This window also tells you the name of a screen font's matching downloadable printer-font file if it has one. This information is a big help for people who have inadvertently changed the names of their downloadable font files. And you can keep those downloadable fonts in any folder or disk that contains a font file opened by Suitcase II. Plus you can share them across a network.

And if you prefer seeing Font menu lists in their own typefaces, Suitcase II can provide them, either all the time or only when you hold down a modifier (Option, Shift, or Command) key while opening the Font menu. Since it takes a while for Suitcase II to read through all open font files to create such a menu, I prefer to press the modifier key only when I need this feature.



If you select a font and then press Show, Suitcase II not only lets you see the font in various point sizes and styles, but it also tells you the name of the downloadable printer-font filename.

You can even choose which modifier you prefer to use.

You can rename any DA or sound and rename or renumber any Fkey from Suitcase II's window, and you can have your most frequently used items at the top of the list or in alphabetical order. And when you're in MultiFinder, you can hold down the modifier key to suppress your DA list, making more room for the application list at the bottom. Suitcase II remains at the top of the list, however, in case you need to select a DA.

Previous versions of Suitcase warned against opening or closing font files from within applications, because most applications create their Font menu at the time you open them and do not update them in response to newly opened or closed font files. I have tried closing font files while in Microsoft Works and found that although Zapf Chancery was still listed on my Font menu, the copy on-screen deteriorated into Geneva once the file was closed. When I highlighted it and reselected Zapf Chancery from the menu, nothing happened.

This version can update Font menus dynamically in applications that can accept the new font information — a nice idea, but more applications will have to be upgraded to accept the up-

date information before this feature becomes useful.

Two utility applications come with Suitcase II: Font Harmony, and Font & Sound Valet. Font Harmony solves a major problem that has plagued Mac font handling. Many applications refer to fonts by their ID number. Before Suitcase, all fonts had to be installed in the System file. Font/DA Mover automatically renumbered any font whose number matched a font already installed, so no two fonts could have the same number. Suitcase changed all that, because multiple files could now be opened. Different fonts could have the same number if they were in different files, so you could select one font from your Font menu, only to have a different one (unexpectedly) show up on-screen or at your printer.

Font Harmony resolves font-numbering conflicts among many font files. Open them all within Font Harmony and click on the Harmonize button. Font Harmony examines all fonts in all open files and makes certain that each has a unique ID number. The Check/Fix button checks font files for the correct file format and makes the necessary corrections.

A second font-handling problem on the Mac is that it automatically creates bold, italics, and other styles in the



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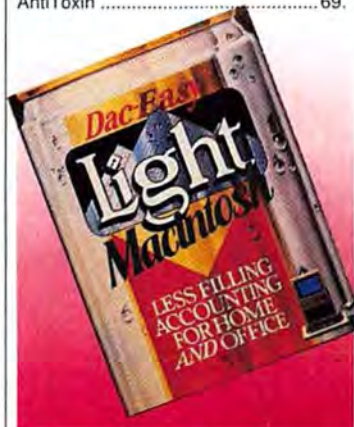
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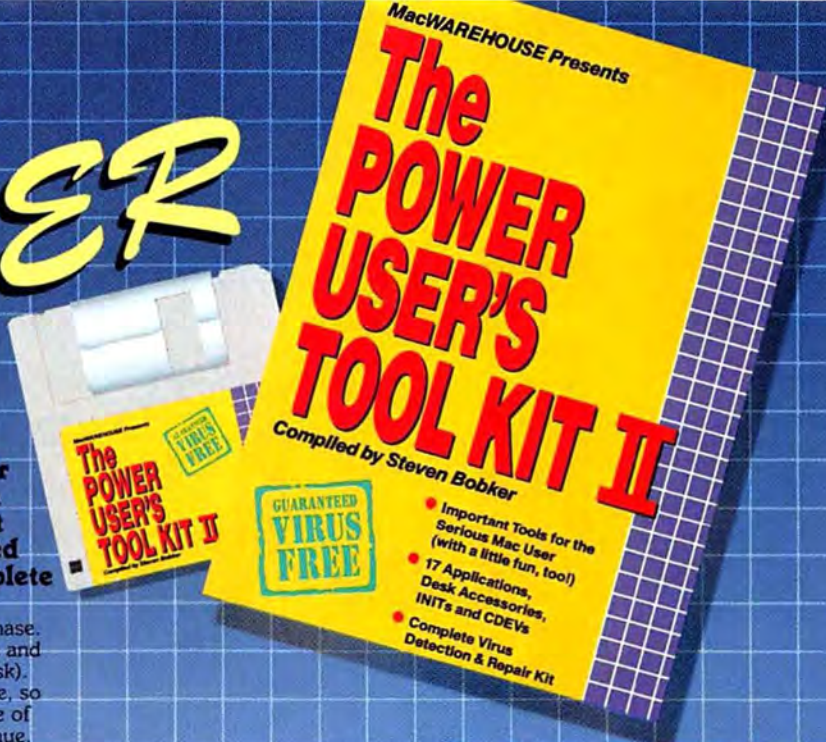
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<b>Bogas Productions</b>	
Super Studio Session 2.0 .....	75.
<b>Coda</b>	
MacDrums .....	32.
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<b>Electronic Arts</b>	
Deluxe Music Construction 2.5 .....	84.
<b>Esthetic Engineering</b>	
Music Mouse .....	49.
<b>Farallon Computing</b>	
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<b>Impulse</b>	
Audio Digitizer w/SoundWave .....	139.
<b>Passport Designs</b>	
Master Tracks Pro .....	259.
<b>NoteWriter</b> .....	189.
<b>Resonate</b>	
Listen 2.0 .....	62.

## DAC

<b>Dac-Easy Light</b> .....	45.
<b>Intuit</b>	
Quicken .....	33.
<b>MECA</b>	
Managing Your Money .....	127.
<b>Monogram</b>	
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<b>Softview</b>	
MacInTax Federal '88 .....	65.
<b>TaxView Planner</b> .....	64.
<b>Survivor</b>	
MacMoney 3.02 .....	61.

## STATISTICAL ANALYSIS

<b>Abacus Concepts</b>	
StatView II .....	339.

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AEC Information Manager .....	415.
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dBase Mac .....	295.
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<b>Odesta</b>	
Double Helix II .....	339.
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<b>ProVUE</b>	
Panarama .....	207.

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<b>Softview</b>	
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<b>Symantec</b>	
More II .....	255.



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A hand-held, high-resolution image scanner for the Mac. Its design allows fast scanning of photographs, images from books and magazines, drawings and logos. Its speed and flexibility make it an ideal tool for all Mac graphic applications including desktop publishing and design. Stores easily. Features real-time display and image editing tools. (input/output) \$409.

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<b>Niles &amp; Associates</b>	
End Note .....	82.
<b>Symmetry</b>	
Acta Advantage w/DA .....	65.
<b>T/Maker</b>	
WriteNow 2.0 .....	119.
<b>WordPerfect Corp.</b>	
WordPerfect .....	185.
<b>Working Software</b>	
QuickLetter .....	75.

## SPELLING CHECKERS

<b>Aegis Development, Inc.</b>	
Doug Clapp's Word Tools .....	42.
<b>Deneba Software</b>	
BigThesaurus .....	54.
Spelling Coach Pro .....	105.
<b>Electronic Arts</b>	
Thunder II .....	52.
<b>Microlytics</b>	
Word Finder (synonym finder) .....	33.
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BookEnds or Sensible Grammar ea	53.

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Falcon 2.0	32.
PT109 or Gato	ea 26.
Solitaire Royale or Tetris	ea 20.
The Software Toolworks	
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DaynaFile single 360K (5 1/4")	529.

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Linkword Languages (Sp, Fr, Ger) ..ea 25.

### BrightStar

Talking Tiles ..... 69.

### Bootware Software

ResumeWriter Pro ..... 75.

### Broderbund

Calculus, Geometry, Physics ..... ea 59.

### Type

..... 20.

### Davidson

Math Blaster ..... 27.

Speed Reader II ..... 39.

### Learning Company

Reader Rabbit ..... 32.

### MicroTech

Elementary Signer ..... 49.

### Smalltalk/VMac (Digitalk)

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### Forecaster (Metacomet Software)

Instant, convenient and reliable weather information direct from the nation's #1 weather service. Accu-Weather lets you quickly download national weather data by modern, then display it in easy-to-read maps, graphs, charts and forecasts. Hourly updates are available for every region of the country. Ideal for aviation, boating, construction and travel. Automated telecommunications makes it easy to use! (business) **\$59.**

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HyperCard or Pagemaker 3.0	ea 35.
Word 4.0 Video Tape	35.

## GAMES

### Access Software, Inc.

World Class Leader Board ..... 28.

### Artworx

Daily Double Horse Racing ..... 19.

### Broderbund

Ancient Art of War At Sea ..... 27.

Shufflepuck Cafe ..... 24.

Where in the World is Carmen ..... 27.

### Bullseye

Ferrari Grand Prix or P51 ..... ea 32.

### Centron Software, Inc.

BlackJack or CrapsMaster ..... ea 27.

CasinoMaster (5 pack) ..... 55.

### Discovery Software

Arkanoid ..... 27.

### Electronic Arts

Starfleet I: The War Begins ..... 36.

Chuck Yeager Adv. Flight Trainer ..... 32.

### HyperPress Publishing

Silver Screen ..... 42.

### Miles Computing

Puzzle Gallery ..... 32.

### Mindscape

Balance of Power, Deja Vu ..... ea 30.

Shadowgate, Uninvited ..... ea 30.

### Nemesis

Go Master ..... 49.

Joseki Tutor ..... 30.

### PCAI

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MacGolf Classic ..... 54.

Road Racer ..... 39.

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MacSnap 2SE or Plus II	439.
MacSnap 4S	998.
MacSnap 8S	1996.
MacSnap 524E (512k to 1 meg)	289.
MaraThon SP	189.
MaraThon Accelerators	Call.

## Everex

EMAC 20D (hard drive)	520.
EMAC 20D Deluxe (O footprint)	585.
EMAC 40D Deluxe (O footprint)	995.
EMAC 60T (tape backup)	895.
EMAC FS-102	2495.
Impact Hard Drives	Call.
Kennet Technology	
Drive 2.4	375.

## The Puzzle Gallery:

### At the Carnival

#### (Miles Computing)

The author of "The Fool's Errand" Cliff Johnson brings you the all new mind boggling, brain-teaser The "Puzzle Gallery". It features 180 challenging puzzles, complete with digitized sound and Mac II color! Find out if you can survive Hazard Park ... (games) **\$32.**



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Finger Signer ..... 29.

### Simon & Schuster

Typing Tutor IV ..... 35.

### The Software Toolworks

Mavis Beacon Teaches Typing ..... 35.



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## SmartOne

**2400/1200XMAC Modem**  
Receive electronic mail, check out stock portfolios or flight reservations. Features include Quicklink, MacNet, Compuserve, auto answer/auto dial and a two year warranty. (modems) \$169.



## Alphabits

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## ResumeWriter Pro

Takes all the hard work out of applying for a new job. Just type in your answers to its questions and ResumeWriter will create your resume. You can customize it to include or exclude items depending on the job. (business) \$75.



## SuperCard

A "personal software toolkit" that gives you the power to create authentic Mac software. Powerful scripting environment with rich graphic creation capabilities. Ideal for creating anything from simple personal productivity stacks to full-color multimedia presentations. Intuitive programming language and on-line reference. A powerful graphics creation environment provides color painting and drawing, animation, TIFF and PICT import, and AutoTrace™. Imports HyperCard stacks and standard Mac resources. (hyperware) \$145.

Rapport .....	229.
La Cie, Ltd.,	
Cirrus Capsule 3.5 Ext. Drive Kit .....	189.
MACstor Capsule 3.5 Int. Drive Kit .....	99.
MiniScribe	
20Mb Raw Int. Drive .....	379.
45Mb Raw Int. Drive .....	549.
Mobius	
MultiScreen Video Card .....	349.



## MAC 101 Keyboard (Data Desk)

Features 101 keys including a numeric keypad, a separate T-shaped cursor keypad, Cancel Key, Option and Command keys at both ends, definable function keys, plus scrolling, page control, and zooming keys. Comes with free macro software and manufacturer's two year warranty. (input/output) \$145.

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MacBottom Hard Drives .....	Call for.
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Peripheral Land, Inc.	
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UniMac	
3.5 or 5.25 Int. Mounting Kits .....	Call.
Quantum	
Quantum 40 MB Raw Drive .....	545.
Quantum 80 MB Raw Drive .....	897.

## MODEMS

Abaton	
InterFax12/48 .....	325.
Best Data Products	
SmartOne 2400/1200 .....	169.
EPIC Technology	
2400II Internal Modem .....	315.
Everex	
EMAC 2400 .....	225.
Hayes	
Smartmodem 1200 .....	299.
Smartmodem 2400 .....	449.
Smartmodem 9600 (V series) .....	985.
Prometheus	
Promodem 2400 .....	309.
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Supra	
Supra Modem 2400 .....	149.
US Robotics	
Courier Modems .....	Call.

## BLANK MEDIA

B.A.S.F.	
DS/DD (box of 10) .....	17.
Sony	
DS/DD (box of 10) .....	18.

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DataDesk	
Mac 101 Keyboards .....	145.
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Koala	
MacVision 2.0 .....	219.
Kraft	
ADB Joystick Premium III (SE&II) ...	51.
Kurta	
IS/ADB Tablet .....	259.

## Marathon 030 (Dove)

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LYNX Computer	
Turbo Trackball (512/Plus or SE/II) .	65.
Mouse Systems	
A+ Mouse (512/Plus or SE/II) .....	Call.
Seikosha America	
Seikosha Printer (dot-matrix) .....	235.
Summagraphics	
Bit Pad Plus .....	325.
ThunderWare	
LightningScan .....	409.
ThunderScan 5.0 .....	189.



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Computer Friends, Inc.	
MacInker (IW & IW II) .....	41.
Curits	
Computer Tool Set .....	19.
Disk Holder (holds 40) .....	9.
Surge Suppressors (full line) .....	Call.
Goldstein & Blair	
The Macintosh Bible .....	21.
I/O Designs	
ImageWare II Carrying Case .....	49.
IW II Ribbons-Black or Color .....	Call.
Macinware Mac II Carrying Case .....	89.
Macinware Plus Carrying Case .....	64.
Macinware SE Carrying Case .....	75.
Monitorware Apple RGB Case .....	79.
Kensington	
Anti-Glare Filter .....	33.
Apple Security Kit .....	34.
Mac II Stand w/Cable Kit .....	65.
MasterPiece Mac II .....	105.
PowerTree SurgeProtectors .....	Call.
System Saver .....	64.
Mobius Products	
Fanny Mac QT .....	60.
SE Silencer .....	39.
Orange Micro	
Grappler L/Q or LS .....	Call.
Targus, Ltd.	
Deluxe Plus/SE-XKB Case (black) ..	75.
ImageWriter II Case (black) .....	49.
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## Quick Clicks

Style menu by altering the regular screen fonts. From a typesetter's point of view, Helvetica Italic is not the same as a slanted version of regular Helvetica, however. For proper typography, you need separate screen fonts and downloadable printer fonts for each style. This necessity has led to a congested Font menu (Bodoni Laser, Bodoni Italic, Bodoni Bold, Bodoni Bold Italic).

Font Harmony can combine all the members of a font family into a single listing (e.g., Bodoni) on the Font menu, thus making the Font menu smaller and less confusing. You can access the correct downloadable printer font by selecting Italic, Bold, or both from the Style menu.

A menu item lets you choose whether or not to include condensed and extended fonts when combining families. Your choice depends on whether the applications you are using have those choices in their Style menu. (Page-Maker does not have them; Ready, Set, Go! does.)

I'm concerned about nonstandard font storage. Someone who has combined families including condensed and extended will lose the ability to access the condensed and extended styles in any application that doesn't have those menu items. In fact, if your menus don't have those choices, there is no way to know whether your font files contain those styles. Therefore, although I highly recommend using Font Harmony to resolve numbering conflicts, I believe you should carefully weigh your own situation before combining families.

Since the majority of applications don't have separate Style menu listings for condensed and extended type, I suggest you exclude those styles if you decide to combine families, and keep copies of the uncombined families in case you change your mind.

With so many fonts, DAs, sounds, and Fkeys available, disk space has become ever more valuable. Font & Sound Valet compresses font and sound files to make them smaller on disk, and Suitcase II can use the compressed files directly — actually, it decompresses them in RAM. Like combining font families, this change is fine

as long as the compressed fonts and sounds remain with someone who knows they have been altered. Friends who don't have Suitcase II, however,

**E**verything  
in the Suitcase II package  
worked exactly as I wished.  
The Suitcase II window is  
a joy to operate.

will not be able to use them.

I tested Suitcase II, version 1.2.2. Everything in the Suitcase II package worked exactly as I wished. The Suitcase II window is a joy to operate, mostly because of its utter simplicity. As a previous Suitcase user, I jumped right into this new version without even thinking about it. I tested this version on several network installations and found no compatibility problems.

The manual is clearly written. In addition to describing the operation of Suitcase II, Font Harmony, and Font & Sound Valet, it provides a step-by-step troubleshooting section.

Suitcase II may be riding a major hit's coattails, but this is one sequel that's a hit on its own.

— Darryl Lewis

### Suitcase II



List Price: \$79

Published by: Fifth Generation Systems, 11200 Industriplex Blvd., Baton Rouge, LA 70809; (800) 873-4384.

Version: 1.2.2

Compatibility: 512KE or later.

Application Size: 40K

Copy Protection: None



# Desktop De Mille.



**"Best New  
Desktop Video  
Product."**

*- Mac user editors  
choice award 1989*



**Graphics and animation  
over live, full-color video**



**Full-color digitizer  
captures video**



**Comprehensive,  
easy-to-use software**



**Special effects such  
as translucent graphics**

So you wanna be in pictures. Well, with our ColorSpace II videographics card we'll put you one step closer to creating your own multimedia masterpiece. Color-

Space II allows you to produce full color, professional quality videotapes and multimedia presentations in-house, inexpensively, in minutes. Cecil B. should have had it so good! It's easy to install, uses only one slot in your Mac II and is fully compatible with all standard Macintosh II applications including: HyperCard, SuperCard and Director. Use the ColorSpace II card with *or in place of* your Apple Video card, *and* in conjunction with other Macintosh II cards. ColorSpace II is fully NTSC-compatible and works with a wide range of standard consumer and professional NTSC and RGB video equipment. In addition, it supports 256 color, flicker-free graphics on RGB multisync-type monitors.

## ColorSpace II™ DESKTOP VIDEO PRODUCTION

ColorSpace II's genlocking lets you synchronize your Macintosh graphics to almost any VCR, videodisc, or other standard video

signal. Then overlay titling or graphics — mix the two signals together — and display or record the results. In no time you'll be creating eye-popping fly-thru logos and animations over live video. Other advanced features such as translucent graphics and dimmed video background are readily selectable with ColorSpace II's easy-to-use software. And, unlike the competition, ColorSpace II has full RGB-quality mixing of the video and graphics for superb, simultaneous RGB and NTSC video output. ColorSpace II can also capture (digitize) video images from standard NTSC or RGB video sources in as little as 1 second for full color. So if you want to be in pictures get ColorSpace II, get an agent and get famous!

Actual unretouched screen shots



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# Quick Clicks

## UTILITIES

### ScreenRecorder

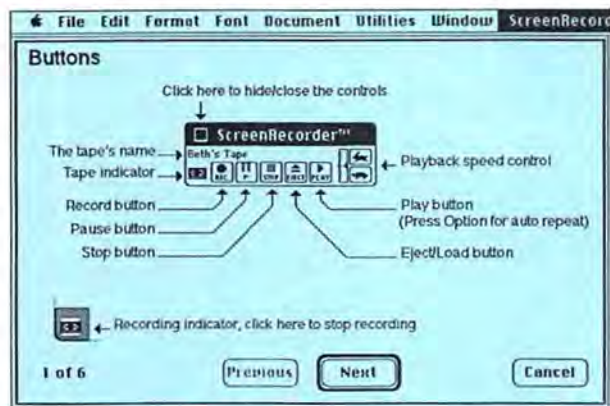
When Apple first shipped the Macintosh, it included a two-disk introduction called the Guided Tour. Guided Tour disks have become a Mac staple, and many major products still ship with Guided Tour disks of their own. The technology and techniques for creating a Guided Tour were (and still are) complex, however, and not accessible to average users.

ScreenRecorder changes all that. It records all activity on a Mac screen, creating "tapes" that you can play back as often as you like. You can send them to other locations via E-mail, modem, or disk, since ScreenRecorder and a tape several minutes long can easily fit on a floppy. You can also have tapes loop continuously until you stop them, which makes them ideal for demos, and incorporate them into and play them back from within a HyperCard stack. ScreenRecorder makes it possible to produce desktop presentations and interactive training materials (such as Guided Tours) easily.

Installing ScreenRecorder is simply a matter of dragging two files into your System Folder (you can omit the 30K help file if you wish) and restarting your Mac. ScreenRecorder automatically installs its driver and DA.

Using ScreenRecorder to record your activities is just about as easy. Open the desk accessory and click on the Rec (Record) button. When you're taping, a tiny moving tape icon is visible in the lower-left corner of your screen. You can pause and restart tapes at any point in the recording process. Click on the tape icon to stop.

If the System RAM cache is turned on, ScreenRecorder waits until a specified amount of new data is generated before saving it automatically to disk. The pauses that occur when the program saves the new material to disk can become annoying. The default setting of 16K is good; larger settings (3,200K is the upper limit!) cause longer pauses with longer intervals between them; and smaller settings (down to 1K) can be infuriating, as the



The ScreenRecorder interface uses a VCR model to control the creation of "tapes" of anything you can do on a Mac screen. This Help screen shows the entire visible interface.

program seems to be constantly writing to disk.

Tapes come in two types: ordinary and looping. Looping tapes act much like the black boxes on airliners, recording a certain amount of information and then recording over the previously recorded information. The default length of a looping tape is 370K, a healthy amount, but you can set it to any value you want, as long as you remember to leave enough floppy or hard-disk storage space for it. Looping tapes rely on disk storage, not RAM. Unless you're creating a looping tape, you have to keep in mind the amount of disk space you have available. Tapes can rapidly get pretty big.

Tapes are not, unfortunately, self-running applications, but by incorporating a tape into a HyperCard stack (using PlayScreen technology), you can send tapes that require only HyperCard for playback. Most Mac owners have HyperCard or have access to it, so placing tapes into stacks is generally the best way to distribute them to a wide audience; unfortunately, you'll probably need 2 megabytes of RAM to run them in HyperCard.

A special Installer stack installs the PlayScreen XCMD into any other stack. Farallon allows anyone to distribute tapes and the stacks that can play them without paying additional fees or requesting special licenses.

PlayScreen can play, but not create, a ScreenRecorder tape. Tapes played through HyperCard can be augmented by sound files (such as those created with Farallon's MacRecorder) to produce multimedia presentations and training programs.

Installing a PlayScreen button can be as simple as running the Installer stack. You can install it into your Home stack or any other stack you want. Advanced HyperCard programmers can program direct calls to the XCMD into their stacks. All the necessary details are in the manual.

Playback, both normal and from within HyperCard, is usually a bit jerky. I found that most tapes ran a bit too slowly; speeding up playback a notch or two made them more effective.

ScreenRecorder comes with an impressive Tour disk, made with ScreenRecorder, MacRecorder, and HyperCard. There's also an excellent manual, whose troubleshooting sections are a model of good manual writing.

If ScreenRecorder tapes could be edited, this would be a five-mouse program and an absolute necessity in every presenter's and trainer's tool kit. As is, it's merely excellent.

— Jake Paden

#### ScreenRecorder

★★★★½



List Price: \$195

Published by: Farallon Computing,  
2201 Dwight Way, Berkeley, CA 94704;  
(415) 849-2331.

Version: 1.0

Compatibility: All Macs with 1  
megabyte.

Application Size: Driver, 29K; DA, 44K;  
help file, 30K; HyperCard files, 113K.

Copy Protection: None





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# Quick Clicks

## UTILITIES

### Read-It! 2.0

When Olduvai introduced Read-It! a couple of years ago, the company had the Mac OCR (optical character recognition) market pretty much to itself. Since then, the market has tightened up, but Olduvai has continued upgrading its package, and Read-It! 2.0 can hold its own — even against its pricier competitors.

Version 1.0 provided no scanner drivers, but version 2.0 has drivers for almost all Mac-compatible scanners. For the few not included, Read-It! 2.0 can still translate pages the way version 1.0 did: you save the scanned image to a hard disk and then open it from within Read-It! as a TIFF, PICT, or bit-mapped image.

Read-It! makes judging the quality of the scan easy by presenting a highly magnified view of the page upon completing the scan, but it doesn't have automatic page definition. If the page has multiple columns or if you want less than the whole page to be translated, you must select the areas to be read. You can save the selected pattern as a template.

If you have at least 2 megabytes of RAM, Read-It! will work in the background under MultiFinder. If you choose Batch Recognize from the Commands menu, all you have to do is select a font table, the appropriate template, and the scanned images, and Read-It! will do the rest.

Read-It! can translate fax-modem documents in the same way, but since it scans fax documents at 200 dots per inch (dpi), you should expect the error rate to be slightly higher than what you get with other documents.

In general, you can expect an error rate of 1–3 percent, but error rates can go even higher, depending on the quality of the original material, the quality of the scan, the font table, and the user's experience. Speed is also widely variable, but assuming the appropriate font table is available, scanning a type-written page and translating it into ASCII text takes about two minutes.

Read-It! translates all material to

plain ASCII text, but it has several tools for processing the resulting files for different uses. For instance, with a newspaper article, one option strips hyphens and carriage returns from the end of lines to give you normal word wrap in the translated file. Another option inserts carriage returns, tabs, or commas in multiple spaces to make a file importable by a database or spreadsheet.

The most tedious part of using a trainable OCR product such as Read-It! is building a new font table, but you rarely have to do so. You'll already have the appropriate font table, either provided by Olduvai on the program disks (22 are supplied) or from the last time you worked with similar material.

If you're not sure whether you already have the necessary font table, Read-It! will look through the font-table library on disk, finding the best match. I was surprised by how seldom the match was adequate. Still, it helps to use a copy of an existing table for a head start on building a new one.

Another aid for starting a font table is built into the program. Just type an exact copy of a selected portion of a scanned page and choose EasyLearn. Read-It! will then enter all the characters of the selected text into the font table. When it's done, you can use Learn and Recognize, the mode in which Read-It! stops only on the characters it's unsure of.

Read-It! has a huge selection of user-adjustable controls. You don't have to learn to use them to operate the program, but when you need them, they're there. These controls include the ability to adjust the program's sensitivity to what is a space or a line, and

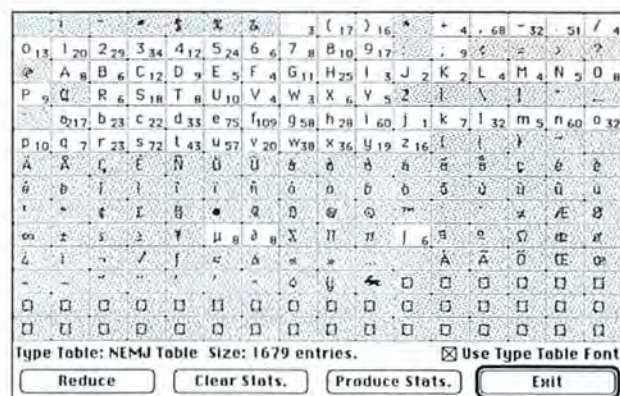
its confidence level, the point at which it marks a questionable character as an error or enters it into the text.

Olduvai advertises that Read-It! works on a Mac Plus, but the manual hedges a little on this claim. A 300-dpi scan of a full page takes up most of a megabyte by itself. The manual recommends scanning half a page at a time if you have only 1 megabyte.

Read-It!'s manual is well laid out and written in an informal style with much experience-based advice. When I felt ready to tackle the advanced controls, though, the section was much too short. Too often, when I was looking for specific instructions, the advice was to experiment.

For performance and value, Read-It! 2.0 is an excellent choice. It provides efficient — if not necessarily blazing — OCR performance without requiring a huge investment.

— Scott Beamer



Font tables are at the heart of Olduvai's Read-It! OCR software. This font-table map shows the progress in developing a successful table. Grayed-out characters have yet to be encountered. The subscripts show the number of bit maps stored for each character. The Reduce button removes the bit maps least used for identification.

### Read-It! 2.0

★★★★½



List Price: \$495

Published by: Olduvai Corporation,  
7520 Red Road, Suite A, South Miami,  
FL 33143; (800) 822-0772;  
(305) 665-4665

Version: 2.0

Requires: Scanner

Compatibility: All Macs with 1  
megabyte.

Application Size: 211K. Supplied font-  
table library is 315K.

Copy Protection: None



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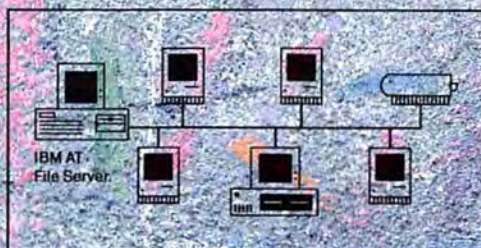
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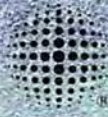
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# Quick Clicks

## UTILITIES

### Virex

In a world in which software is often measured by numbers of features, Virex stands out. It has few features, small menus, and more explanation and advice than instructions.

In a world in which the fear of computer viruses is pervasive and in which (by virtually all estimates) more than 10 percent of all Macs have been infected, Virex is the first commercial antivirus program. It examines disks, looking for the known Mac viruses: MacMag, nVir, and Scores. It also flags things that might be viruses — it calls them Sneak viruses.

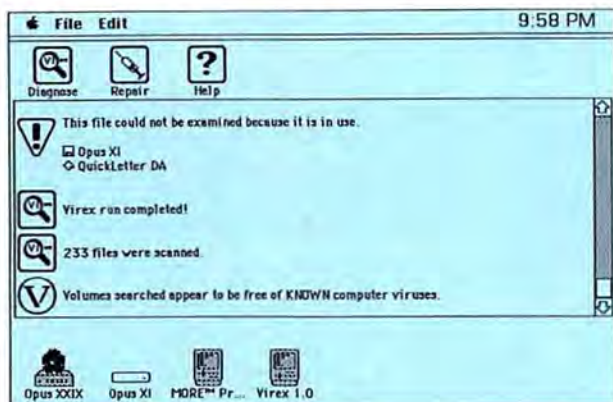
**V**irex

scored 100 percent on  
finding known viruses.

If all you want Virex to do is look, that's all it will do. If it finds occurrences of the three known viruses, it can attempt to repair or disinfect the infected files. It's very good, although not foolproof, at repairing infected files. Virex does a lot of looking when checking hard disks, and the process can take some time. A graphic metering bar shows how the job is going. Virex is actually quite speedy for a program that does this much disk access.

During some careful testing, Virex scored 100 percent on finding the known viruses. It repaired all but one of the infected test files. (Actually, as the manual suggests, you're often better off replacing infected applications with known clean copies.)

As Virex works, it tells you exactly what it finds and what it's doing, and you can print this report. The way the reporting works is Virex's only weakness. Printed reports sometimes failed to match what appeared on the screen (particularly when it was printing to a



GCC Technologies WriteMove printer — icons had sides omitted and letterspacing was poor). The program has no provision for saving reports. Not only should it be able to save its reports, but it would be nice if it could automatically transmit them over a network to some collection point.

Virex is expensive, and it's not really meant for the single, knowledgeable user. Those people usually have an array of public-domain tools for the job. No one of the public-domain tools does as much as Virex, but in combination they can do the same job, if you know what you're doing.

Virex is really a tool for work groups with many Macs. It's intended for frequent, nearly mindless operation by users who don't know or care about power use. In that respect, it is superb.

The publisher (HJC) and the author (Robert Woodhead of Wizardry fame) are committed to keeping the program up to date. If and when new viruses are discovered, HJC will offer new versions of Virex that will stamp them out. It'll also charge a substantial amount for each update.

Virex comes with a very good manual that includes a section on safe computing. It also reminds users that although it is effective against viruses, there are other nasties (so far not seen on the Mac) such as worms and Trojan horses that it can't prevent. In that respect, it's not alone.

When Virex was released, it came under fire from some people on several grounds. Some said that any for-the-good-of-the-community program such as this one should be free. That would be nice, but it ignores reality. Programmers and publishers should be al-

Aside from its help screen, this is all you see of Virex, an antiviral utility. The disks that are available to be checked are at the bottom, while your action choices are at the top.

lowed to make a living. More serious criticism was leveled at its price, which was denounced as exorbitant. But that's only so if you measure value by the number of features in a program. Virex offers reassurance and security, and, considering that it's meant for use in a business environment, I believe its price is very reasonable. I have no doubt that the author and publishers will continue to support this program and that, rather than being a challenge to would-be virus writers, it is and will remain a deterrent.

— Jake Paden

At press time, HJC had begun shipping Virex, version 1.3. Virex 1.3 can check itself for viruses and has an auto-diagnose feature for checking multiple disks. It also includes protection against three new viruses: INIT29, Hpat, and ANTI. — Ed. ☐

**Virex**  
★★★★½



**List Price:** \$99.95. **Updates:** \$15. Site licenses (100-CPU minimum): \$20 – \$30/computer; updates, \$4 – \$8.  
**Published by:** HJC Software, P.O. Box 51816, Durham, NC 27717; (919) 490-1277.

**Version:** 1.1a

**Requires:** System Software version 4.1 or later.

**Compatibility:** All Macs with 1 megabyte.

**Program size:** 56K

**Copy Protection:** None



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Spelling checker size	100,000 words	100,000 words	80,000 words	80,000 words
Font size range	4-127 pts.	7-24 pts.	7-72 pts.	2-127 pts.
Maximum recommended document size (in pages)	Over 2,000	240	50	500
Number of open documents	Unlimited *	1	30	30
<b>Mail merge</b>	<b>Yes</b>	No	No	Yes
Number of editable, on-screen columns (WYSIWYG)	4	1	1	1
On-screen auto-numbering footnotes	Yes	No	No	No
Automatic repagination	Yes	Yes	No	No
Graphics in same line as text	Yes	No	Yes	Yes
Multiple headers and footers	Yes	No	No	Yes
Extensive Undo	Yes	No	No	No
Variable line spacing (in points)	Yes	No	No	Yes
Selective font, size, style, and ruler changes	Yes	No	No	Yes
<b>MacUser Magazine's Best New Word Processor</b>	<b>Yes</b>	No	No	No
Search for a word	2.4 sec	7.6 sec	9.5 sec	9.7 sec
Spell Check document	6.3 sec	2 min 34.0 sec	2 min 2.3 sec	1 min 48.0 sec
Copy & Paste large area	6.8 sec	1 min 0.9 sec	12.4 sec	12.3 sec
Change font size of document	10.7 sec	50.2 sec	17.6 sec	16.2 sec
Change font of document	10.8 sec	37.1 sec	14.1 sec	15.2 sec
'Save As' a 12-page document	3.6 sec	9.4 sec	20.3 sec	19.6 sec
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Happy Users	Yes	?	?	?

\* Number determined by Macintosh system constraints.

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Best Data Products SmartOne 2400/		Prometheus	
1200 w/software & cable	Special 169.	Promodem 2400M Ext.	
CMS CMS 2400BMX	179.	(Software & Cable)	Special 199.
Epic Epic 2400 Int. SE	315.	Supra Corporation	
Epic 2400 Int. Mac II	Special 315	Supra Modem 2400	149.
Hayes Microcomputing		U.S. Robotics	
Smartmodem 1200	299.	Courier 1200 (Hayes Compatible)	199.
Smartmodem 2400	449.	Courier 2400 (Hayes Compatible)	349.
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Microsoft		Tops Repeater	129.
Microsoft Mail 1-4 users	195.	Tops FlashCard	169.
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Font Sharer	149.	InBox-Starter Kit	Special 149.
Shiva NetModem V2400	479.	Tops Teleconnector Din8 or DB9	39.



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Mac Director	115.	ThunderWare ThunderScan	189.
Kurta IS ADB Tablet	255.	LightningScan	Special 409.
Cordless 4 Button Cursor	65.	Mac II Power Accessory	42.

## Expressionist 2.0 by Allan Bonadio Associates

**Expressionist 2.0** is a powerful application and desk accessory that quickly and easily creates mathematical equations for your word processing, drawing, or page layout documents. A must for every scientist and engineer! .... **\$79.**



## EDUCATIONAL/CREATIVE SOFTWARE

Ars Nova Practica Musica 2.1	Special 75.	Electronic Arts Mavis Beacon Typing	35.
Barron's Barron's SAT	35.	Venture's Business Simulator	47.
Bible Research The Word (KJV or NIV)	165.	Deluxe Music Construction Set V2.5	84.
Bogas Productions Studio Session	49.	First Byte	
String Quartet, Country or Heavy Metal	15.	Dinosaur Discovery Kit, Puzzle	
Super Studio Session	75.	Storybook or Rhyming Notebook	27.
Bright Star Technology Alphabet Blocks	32.	Great Wave Software KidsTime	26.
Talking Tiles	69.	Number Maze	27.
Broderbund		Crystal Paint	27.
Jam Session or Black & White Movies	30.	Individual Typing Instructor Encore	26.
Sensei Geometry, Calculus or Physics	59.	Learning Company Reader Rabbit	32.
Type!	20.	Mindscape Perfect Score SAT	
Where in the World is Carmen SanDiego?	27.	w/The Perfect College	46.
Where in the USA is Carmen SanDiego?	32.	Niles & Associates End Note	82.
Coda Mac Drums	32.	Nordic	
Perceive	52.	MacKids Educational Prog. (ea)	28.
Davidson & Associates		Simon & Schuster Typing Tutor IV	35.
Speed Reader II	36.	Springboard Top Honors	59.
Math Blaster or Word Attack!	27.	Family Matters or Atlas Explorer	28.



## FASTAT by SYSTAT

**FASTAT** is a new statistics and graphics package for the Mac that is accurate and easy to use. Use it for graphics, tables, financial projections and surveys. **FASTAT** has more features and statistical routines than Mac stat packages costing over twice as much. Fast help, 3D scatterplots and surfaces, MacDraw-like tools, and color make **FASTAT** spectacular. ... **\$165.**

## BUSINESS SOFTWARE

Abacus Concepts StatView II (Mac+, SE, II w/68020 & 68881)	339.	Microsoft Microsoft Works 2.0	189.
StatView SE+ Graphics	229.	Microsoft Excel 1.5	255.
Access Technology Trapezoid 2.1	149.	Nolo Press WillMaker 3.0	34.
Ashton Tate Full Impact	249.	For the Record	29.
BrainPower ArchiText	179.	Paracomp Milo	159.
StatView 512 Plus	175.	Pro Plus WallStreet Investor V3.0	469.
Math View Professional	139.	Satori Software	
DataScan	118.	Bulk Mailer 3.2	Special 78.
Bravo Technologies MacCalc	77.	Bulk Mailer Plus	195.
Chang Laboratories C.A.T.	Special 229.	Select Micro Systems, Inc. Exstatix	219.
Claris MacProject II	379.	MapMaker	Special 215.
Smartform Designer	309.	Shana Corporation Fast Forms	89.
Individual 101 Macros For Excel	37.	SoftView MacInUse	42.
Mainstay Capture	42.	Form Set Business Forms	55.
Mac Flow 2.0 or Mac Schedule	115.	Synex Mac Envelope 4.0	Special 55.
Meta Software MetaDesign	199.	Mac Invoice	29.
Micro Planning International		Systat Systat 3.2	
Micro Planner 6.0	Special 325.	(Specify MacPlus, SE or Mac II)	459.
		Fastat	Special 165.



# Overnight \$3



## SHOWCASE F/X by Aegis

Aegis' **SHOWCASE F/X** is the feature packed special effects and animation system for fonts and graphics. Enhance your graphic images with powerful, unique headlines by applying styles to any Macintosh font. Distort, rotate and rescale graphic images and fonts. Create animated text, and play it back at 60 frames per second! For high impact presentations and desktop video, you can't beat Aegis' **SHOWCASE F/X**. ..... **\$199.**

## SPELLING & GRAMMAR CHECKERS

<b>Aegis Development</b>		<b>Lundeen &amp; Associates</b>	
Doug Clapp's Word Tools 2nd Edition	42.	WorksPlus Spell 1.1	46.
<b>A.L.P. Systems</b>		<b>Microlytics, Inc.</b>	
MacProof 3.0	115.	Word Finder (Synonym Finder)	33.
<b>Deneba Software</b>		Electronic Word Finder	79.
Big Thesaurus	54.	<b>Sensible Software</b>	
Spelling Coach 3.0 Professional	105.	Sensible Grammar or BookEnds	53.
<b>Electronic Arts</b> Thunder! II	49.	<b>Working Software</b> Spellswell 2.0	45.



## MAC-101 Keyboard by DataDesk

Replace your Mac's keyboard with the **MAC-101** by DataDesk. The positive tactile, firm feel 101 includes a full numeric keypad, 15 function keys, 6 page control keys, and a T-style cursor pad. Includes 101-Keys desk accessory software, a powerful macro utility that allows you to exploit the full power of the function keys in almost any Mac application. Available in ADB and non-ADB versions. .... **\$145.**

## DESK ACCESSORY PROGRAMS

<b>Affinity Microsystems</b>		<b>Electronic Arts</b> Disk Tools Plus	31.
Tempo II	89.	<b>Mainstay</b> Think'n Time	61.
Affinifile	46.	<b>Solutions, International</b>	
<b>Borland</b> SideKick V2.0	68.	Super Glue	50.
<b>Casady &amp; Greene, Inc</b> QuickDex 1.4A	32.	SmartScrap & The Clipper V2.0	46.
<b>CE Software</b> DiskTop 3.0	27.	<b>Symmetry</b> HyperDA (Req. 512K)	35.
<b>Deneba Software</b> Comment 2.0	54.	<b>TENpointO</b> OpenIt!	49.



## FileGuard by ASD Software

**FileGuard** is the automatic file protection program that provides a comprehensive solution to all your problems of security and confidentiality. This integrated software will enable the user to easily protect documents against unauthorized access. **FileGuard** can even control the insertion of diskettes to prevent the illegal copying of files or the introduction of a destructive computer virus. ... **\$129.**

## UTILITY SOFTWARE

<b>ALSoft</b> Disk Express	<b>Special</b> 49.	<b>Microlytics, Inc.</b> GOfer	44.
Font/DA Juggler Plus	42.	<b>Microseeds</b> INITPicker	29.
Master Juggler	64.	Redux	59.
<b>A.S.D.</b> FileGuard	<b>Special</b> 129.	ScreenGems	47.
<b>Berkeley System Design</b>		<b>Olduvai Software</b> Icon-It!	45.
Stepping Out II	<b>Special</b> 52.	MultiClip	59.
<b>Beyond Inc.</b> Menu Fonts 2	29.	Read-It! O.C.R. Personal	109.
<b>Central Point Software</b>		Read-It! O.C.R. 2.0	245.
Copy II Mac		<b>PCPC</b> HFS Back-Up 3.0	54.
(Includes MacTools)	<b>Special</b> 20.	<b>SuperMac Software</b>	
PC Tools Deluxe Mac v5	45.	SuperSpool 5.0	<b>Special</b> 54.
<b>CE Software</b>		SuperLaserSpool 2.0	<b>Special</b> 79.
QuickKeys (Macro Program)	53.	Diskfit 1.4	54.
MockPackage Plus Utilities	27.	Sentinel 2.0	149.
<b>Farallon Computing</b> Screen Recorder	135.	<b>Symantec</b> MacSQZ!	59.
<b>Fifth Generation Systems</b> Suitcase II	45.	Symantec Utilities for Mac (S.U.M.)	69.
FastBack	54.	Symantec AntiVirus for	
Power Station	32.	Mac (S.A.M.)	<b>Special</b> 69.
Pyro!	15.	<b>Williams &amp; Macias</b>	
<b>HJC</b> Virex	69.	myDiskLabeler w/Color	31.
<b>Icom Simulations</b> On Cue	36.	myDiskLabeler w/LaserWriter Option	34.
TMON	95.	StickyBusiness	99.
<b>Insight Development</b>		<b>Working Software</b>	
MacPrint	<b>Special</b> 79.	Findswell 2.0 (Document Finder)	36.
<b>MainStay</b> AntiToxin or ClickPaste	65.	<b>XTree Company</b> XTree	55.



## Practica Musica 2.1 by Ars Nova

Your personal music tutor! **Practica Musica 2.1** adds a 190-page textbook and several new activities to this award-winning ear training and music theory program. Perfect for home or school. .... **\$75.**

## DATABASE MANAGEMENT

<b>Acus</b> 4th Dimension	<b>Special</b> 399.	<b>FoxBase+</b> Multi-User	315.
<b>Activision</b>		<b>FoxBase+</b> Runtime	158.
Reports for Hypercard	69.	<b>Microsoft</b> Microsoft File 2.0	129.
Focal Point & Business Class Bundle	55.	<b>Odesta</b> Double Helix II	339.
<b>Apple Computer</b>		<b>DataDesk</b> Professional	289.
HyperCard	42.	GeoQuery	199.
<b>Ashton Tate</b>		<b>Preferred Publishers</b> Database	75.
dBASE Mac 1.0	295.	<b>ProVue</b>	
<b>Borland</b> Reflex Plus	189.	Panorama	207.
<b>Claris</b>		<b>Software Discoveries</b>	
FileMaker II	229.	RecordHolderPlus	65.
<b>Fox Software</b> FoxBase+	205.	<b>TENpointO</b> FocalPoint II	119.



## Cutting Edge 800K Drive by Cutting Edge

The **Cutting Edge 800K** floppy disk drive takes advantage of the newest technology to offer high speed, low noise, high reliability in a compact, stylish case. The **Cutting Edge 800K** floppy drive is compatible with all new ROM Macs including the Mac SE and Mac II. The **Cutting Edge 800K** would make an attractive addition to many Macs. .... **\$175.**



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# Programs Plus



## Rags to Riches '3-Packs' by Chang Labs

**Rags to Riches '3-Packs'** offers the user flexible reporting, batch totals for any time period, user definable accounting cycles and impressive speed. As a special bonus, if you choose a '3-Pack' before June 30, *Programs Plus* will send you an Aatrix Payroll program, absolutely FREE! **General 3-Pack** (G/L, A/R, A/P) (\$289), **Pro 3-Pack** (G/L, Pro. Bill., A/P) (\$359), **Retail 3-Pack** (G/L, Invent., A/P) (\$359).

## ACCOUNTING PACKAGES

<b>Aatrix Software</b>		<b>Layered</b>	
Aatrix TimeMinder	109.	Insight One Write	185.
Aatrix Payroll Plus	159.	Insight Expert GL, AR, or AP	455.
<b>Bedford Software</b>		<b>MECA</b>	
Simply Accounting	219.	Managing Your Money	127.
<b>Chang Labs</b>		<b>Monogram</b>	
Rags to Riches Gen. 3-Pak 3.1 (GL/AR/AP)	<b>Special 289.</b>	Business Sense	<b>Special 279.</b>
Rags to Riches GL, AR, or AP	119.	Dollars & Sense 4.0	81.
<b>Check Mark MultiLedger</b>	259.	<b>Peachtree</b>	
Payroll	189.	Back To Basics Professional (GL/AR/AP/INV)	159.
Cash Ledger	129.	<b>Satori Software</b>	
<b>Dac Software</b>		Components GL	389.
Dac-Easy Light	44.	<b>Survivor Software</b>	
<b>Intuit Quicken</b>	33.	MacMoney 3.0 (En. Ver.)	61.



## Bulk Mailer 3.2 by Satori Software

**Bulk Mailer** is a powerful program specifically designed for managing mail lists. It does everything you could want in a mail list program, including duplication elimination, zip and alpha sorts, plus much more. .... **\$78.**

## COMMUNICATION SOFTWARE

<b>Compuserve</b>		<b>Insignia SoftPC</b>	249.
Compuserve Starter Kit	24.	<b>Software Ventures</b>	
Compuserve Navigator	45.	Microphone II (Includes Glue)	225.
<b>DataViz</b>		<b>Solutions, International</b>	
MacLink Plus with Cable	139.	BackFax	127.
<b>Freesoft</b>		<b>Synergy Software</b> VersaTerm	65.
Red Ryder V10.3	54.	VersaTerm-Pro	189.
<b>Hayes</b>		<b>Traveling Software</b>	
Smartcom II 3.0	68.	LAP-LINK	83.

## LightningScan by Thunderware

**LightningScan** is a hand-held, high resolution image scanner for the Macintosh. Its design allows fast scanning of photographs, images from books and magazines, drawings, and logos. Its speed and flexibility make it an ideal tool for all Macintosh graphic applications including desktop publishing and design. After use, the scanning unit is easily stored in any desk drawer. .... **\$409.**



## GRAPHICS SOFTWARE

<b>3G Graphics</b>		<b>Informix Wingz</b>	275.
Images w/Impact Graphics & Symbols	59.	<b>Innovative Data Design</b>	
Images w/Impact Business 1	69.	Residential Construction	139.
<b>ABA Software</b>		Dreams	279.
Draw It Again Sam 2.0	79.	MacDraft 1.2B	145.
Graphist Paint II	289.	<b>Laserware</b> Laserpaint Color II	359.
<b>Adobe Systems</b> Adobe Illustrator 88	309.	<b>Letraset</b>	
Adobe Fonts (Various volumes)	Call	ImageStudio 1.5	275.
<b>Aldus</b> Freehand	349.	<b>MacroMind</b> MacroMind Director	449.
<b>Altsys Corp.</b> Fontographer 2.2	229.	<b>Micro CAD/CAM</b> MGMStation	685.
FONtastic Plus 2.0 or KeyMaster	52.	<b>Micro Illusions</b>	
<b>Ashton Tate</b> Full Paint	69.	Photon Paint	179.
<b>Broderbund</b>		<b>Micro: Maps</b>	
Print Shop or Clip Charts	35.	MacAtlas Paint 2.0 (MacPaint Format)	45.
Drawing Tables	76.	MacAtlas Hyper Atlas	64.
<b>Casady &amp; Greene</b>		MacAtlas Professional	
Vivid Impressions	69.	(PICT/MacDraw Version)	129.
Quill Pack (vol. 8 & 20)	105.	<b>Microsoft</b>	
Headline Pack (vol. 10-12)	145.	Microsoft PowerPoint 2.1	255.
Modern Pack (vol. 7, 14-18) or Distinctive Pack (vol. 8, 19-22)	195.	<b>Miles Computing</b>	
Classic Pack (vol. 3-6, & 13)	195.	Mac the Ripper or Orchestra of Fonts	32.
<b>CE Software</b> Calendar Maker 3.1	27.	People, Places-Things or Taking Care of Business	32.



## 4th Dimension by Acius

**4th Dimension** is the standard in Macintosh databases. It is easy enough for beginners, yet powerful for high-end users. **4th Dimension** will be up to 100 times faster! The need for programming is almost eliminated! All registered owners of Version 1.0 will get a free upgrade to Version 2.0! Buy now because Version 2.0 will be going up in price. .... **\$399.**

<b>Clarif</b> MacPaint II	99.	<b>NuEquation</b> Nu Paint	99.
MacDraw II	309.	<b>Olduvai Software</b>	
Clarif Cad	629.	Art Clip or ArtFonts 1, 2 or 3	59.
<b>Cricket Software</b> Cricket Draw	168.	<b>Paracomp</b> Swivel 3D	249.
Cricket Paint	99.	<b>Silicon Beach Software</b>	
Pictograph	89.	SuperCard	135.
Cricket Graph	115.	SuperPaint 2.0	129.
Cricket Presents	289.	Digital Darkroom	169.
<b>Deneba Software</b> Canvas 2.0 (Includes Desk Accessory)	159.	Super 3D	179.
<b>Dream Maker</b>		Super 3D 2.0	335.
MacGallery (Hypercard or Paint)	28.	<b>Solutions International</b>	
Cliptures (vol. 1 or vol. 2)	95.	The Curator (Catalog Your Art)	75.
<b>Dubl-Click Software</b>		<b>Springboard</b>	
World Class Fonts: Various Vol. 1-6 (ea)	45.	Certificate Maker	24.
WelPaint: Various Vol. 1-16 (ea)	45.	Springboard Publisher	109.
<b>Electronic Arts</b> Studio 8 (MacII)	319.	<b>SuperMac Software</b>	
<b>Enabling Technology</b>		Pixel Paint 2.0	199.
Clip 3D (ea)	69.	<b>Symmetry</b>	
Pro3D	289.	Picture Base & Wet Paint Bundle	89.
<b>Foundation Publishing</b> Comic People	24.	<b>Synergy</b> KaleidaGraph	119.
Comic Strip Factory	42.	<b>T/Maker</b> Click Art Letters I, Letters II, Personal Graphics, Effects, Business Image, or Holidays (each)	28.
<b>Generic Software</b> Generic CADD	85.	Christian Images	35.
Symbol Libraries:	Call	Click Art EPS Illustrations	75.
<b>Graphsoft</b> Mini Cad 4.0	375.	<b>Zedcor</b> DeskPaint 2.0	69.
Mini Cad +	519.		

## Casino Master Mac II by Centron Software

**Casino Master** Deluxe Version includes five casino games in dazzling Mac II color. Play Blackjack, Craps, Roulette, Video Poker and Baccarat. Detailed manuals include rules, strategy. Standard Version runs on all Mac's with 512K. .... **\$55.**





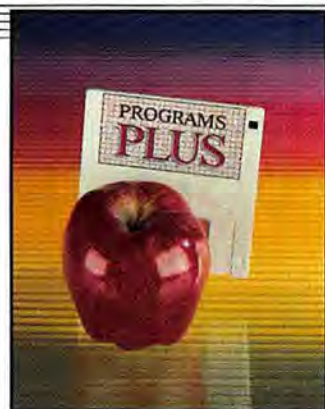
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## TOPS 2.1/InBox/FlashBox by TOPS

With **TOPS (\$149)** you can transform any Mac with at least 512K of memory into a **TOPS Network station**. **InBox (\$149)** enables users to send and receive messages, memos, and files over a **TOPS Network**. With **FlashBox (\$125)** you can speed up your AppleTalk network and allow your Mac to communicate at the Flash talk speed of 770K bits per second.

## HYPERMEDIA & LANGUAGES

Borland Turbo Pascal	68.	Smethers & Barnes	125.
Bright Star Technology		Prototyper	29.
Hyper Animator	99.	Softworks Stack Cleaner	59.
Consulair		HyperTools 1 or 2	135.
Mac 68000 Dev. System	59.	Symantec Lightspeed C	95.
Hyper Press Script Screen	42.	Lightspeed Pascal	49.
Script Expert	49.	Just Enough Pascal	119.
Manx		TENpointO FocalPoint II	
Aztec C	65.	T.M.L.	115.
Aztec C + SDB	99.	TML Pascal II V3.0	42.
Aztec C + MPW	99.	TML Source Code Library II	
Microsoft		Zedcore	99.
Quick Basic	69.	ZBasic 5.0	

## Copy II Mac by Central Point Software

**Copy II Mac** makes back ups of nearly all protected Macintosh software. Even copies some popular programs from a 400K disk to an 800K disk. **Copy II** has great disk utilities including repairing damaged disks and undeleting files. .... **\$20.**

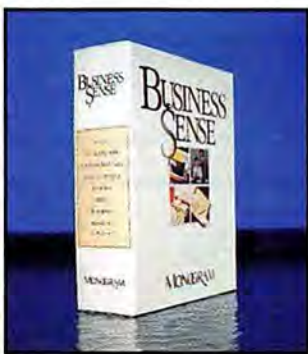


## WORD PROCESSORS & DESKTOP PUBLISHING

Access Technology Mind Write 2.0	95.	Letra Studio	289.
Mind Write Express	139.	LetraFonts (Various Vol. 1-45 ea.)	65.
Aegis Showcase F/X	Special 199.	Microsoft	
Allan Bonadio Associates		Microsoft Word 4.0	255.
Expressionist 2.0	Special 79.	Paragon Concepts Nisus	Special 189.
Aldus Corporation		Preferred Publishers	
Aldus Persuasion	389.	Vantage	59.
PageMaker 3.0	399.	Quark, Inc.	
Ashton Tate		QuarkXPress V2.0	499.
FullWrite Professional	269.	QuarkStyle	199.
Broderbund		Symantec More II	255.
DTP Advisor	47.	Symmetry Acta Advantage	65.
Caere Omnipage	559.	T/Maker Company	
Claris MacWrite 5.0	99.	WriteNow V2.0	99.
Design Science Math Type 2.0	99.	U.S. MicroLabs Font Sizer	79.
Emerald City Smart Art	95.	Word Perfect Corporation	
Letraset		Word Perfect	179.
Design Studio 1	459.	Working Software	
Ready, Set, Go! 4.5	275.	QuickLetter	75.

## Business Sense by Monogram

**Business Sense** is serious business software for the small to medium size business. It's easy to use and hard to outgrow. General Ledger, Accounts Receivable, Accounts Payable, Payroll, Invoicing and Budgeting functions are fully integrated in one powerful package. All this power is easy to use. If your business has what it takes, **Business Sense** from Monogram can take you all the way. .... **\$279.**



## BLANK MEDIA

Single Sided 3 1/2" Diskettes		Centech 3 1/2" DS/DD Color Disks (10)	19.
Bulk (Sony) 3 1/2" SS/DD Disks (10)	14.	Sony 3 1/2" DS/DD Disks (box of 10)	18.
Sony 3 1/2" SS/DD Disks (box of 10)	16.	Fuji 3 1/2" DS/DD Disks (box of 10)	19.
Double Sided 3 1/2" Diskettes		Maxell 3 1/2" DS/DD Disks (box of 10)	19.
BASF 3 1/2" DS/DD (box of 10)	17.	Verbatim 3 1/2" DS/DD Disks (box of 10)	19.
Bulk (Sony) 3 1/2" DS/DD (10)	17.	3M 3 1/2" DS/DD Disks (box of 10)	20.

## Super/SuperLaserSpool by SuperMac Software

**SuperSpool (\$54)** and **SuperLaserSpool (\$79)** take control of printing in the background and return the Mac to your control in seconds. These best-selling print spoolers are the fastest available and include a special desk accessory that lets you delete documents from queue, re-order them, reroute documents to other printers (SLS) and preview or zoom in on documents.



## S.A.M. by Symantec

**S.A.M.** is the only comprehensive virus protection program for the Macintosh. It offers virus protection, detection, and elimination. By tracking suspicious activity caused by viruses, **S.A.M.** will stop all known and unknown viruses from infecting your Macintosh. With all this protection it is virtually impossible for a virus to infect your computer. .... **\$69.**



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## DiskExpress by ALSoft

**DiskExpress** removes all the disk fragmentation that slows you down and optimizes your hard disk for top speed. Plus, **DiskExpress** will detect potential problem areas on your hard disk. Reclaim missing disk space. Rearrange your files to reduce future problems. Safely prevent unwanted file recovery. Quickly unfragment your files and display disk free space. .... \$49.



## C-A-T by Chang Labs

**C-A-T** lets you organize and keep track of the Contacts, Activities, and Time that are crucial to the effective operation of your business. **C-A-T** eliminates clerical drudgery with mailmerge, labelling and calendar functions. .... \$229.

## ACCESSORIES

<b>Abaton</b> ProPoint (ADB Mouse for Mac SE & Mac II)	89.	Printer Muffler Stand (80 & 132)	24.
<b>CH Products</b> Mirage: Quad or ADB (Turns Joystick Into Mouse)	39.	Printer Muffler 80	43.
<b>Mach IV Plus</b> : Quad or ADB	65.	System Saver Mac (Beige or Platinum)	64.
<b>Cutting Edge</b>		Super Base	34.
Cutting Edge MCK-105QK		System Saver SE	52.
Keyboard w/ Quickkeys	145.	Masterpiece Mac II	105.
<b>DataDesk</b>		New Turbo Mouse (Reg. or ADB)	119.
MAC-101 Keyboard/Beige (128k/512k & MacPlus)	Special 145.	Universal Copy Stand	22.
MAC-101 ADB Keyboard/Platinum (Mac SE & Mac II)	Special 145.	Universal Printer Stand	15.
<b>Ergotron</b>		<b>Lynx Computer</b>	
Mousecleaner 360°	15.	Turbo Trackball (Mac & Mac+ or Mac SE & Mac II)	65.
MacTilt (Mac, SE or II)	68.	<b>Mobius</b>	
<b>Farallon</b>		Fanny Mac QT (Beige or Platinum)	60.
MacRecorder Sound System (Mac SE or Mac II)	135.	<b>Mouse Systems</b>	
<b>Goldstein &amp; Blair</b>		A+ Mouse (MacPlus)	65.
Macintosh Bible 2nd ed.	20.	A+ ADB Mouse (Mac SE/Mac II)	85.
<b>Impulse</b>		<b>Moustrak</b>	
Audio Digitizer w/soundware	139.	MousePad 7" x 9" Size	8.
<b>I/O Design</b>		MousePad 9" x 11" Size	9.
Mac Luggage in Navy or Plat.		<b>Orange Micro</b>	
Macinware Plus Carrying Case	64.	Grappler Spooler	39.
Macinware SE Carrying Case	75.	Grappler C/Mac/GS or Alphabits	79.
Imageware II Carrying Case	49.	Grappler L/Q or Grappler L/S	92.
HDware (Hard Disk Case)	49.	<b>Ribbons</b>	
<b>Kalmar Designs</b>		Available in Black, Blue, Brown, Green, Orange, Purple, Red, Yellow, Silver & Gold	
Teakwood Roll-Top Disk Cases:		ImageWriter Ribbon	4.
Micro Cabinet (holds 45 disks)	14.	ImageWriter Black 6-pack	20.
Double Micro Cabinet (holds 90 disks)	21.	ImageWriter Rainbow Pack (6 Colors)	20.
Triple Micro Cabinet (holds 135 disks)	31.	ImageWriter II-Four Color Ribbon	9.
<b>Kensington</b>		ImageWriter LQ Black	17.
Mouseway (Mousepad)	8.	ImageWriter LQ Four Color	20.
ImageWriter or ImageWriter II Cover	9.	Seiksha Ribbon Black	6.
Macintosh Plus/SE Dust Cover	9.	<b>Silicon Comforts</b>	
Tilt/Swivel	22.	MacChimney (Very Effective	
Apple Security Kit	34.	Cardboard Laminated Convection Cooling Device)	16.
Antiglare Polarizing Filter	33.	<b>Targus</b>	
Mac II Stand and Cable Kit	65.	ImageWriter II Carry Case Blk.	49.
Power Tree Surge Suppressors (10, 20, or 50)	Call	Macintosh Plus Carry Case Blk.	59.
		Deluxe MacPlus-XKB Blk.	75.

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**T**he Macintosh has matured since 1984, but not everyone associated with it seems to have matured at the same rate — or to the same extent. This pretentious judgment is based on some overheard conversations about the incursion of “suits” into the hitherto unsullied Mac world. (Am I the only one, by the way, who thinks using *suit* to describe a human being is objectionable? Surely not, she said, answering her own rhetorical question.)

One side of the argument goes like this: Here were all these virtuous, innovative visionaries with their equally virtuous, etc. computer. Then along came this ravening horde of dull, plodding nonentities who insensitively made a business success out of same, robbing the machine of its virtue and putting an end to

all that creative energy. You could tell these guys were out of it because they wore



see Pinstripe Mac in this issue.)

The other side goes something like this (just hum along if you don't know the words): Here were all these totally unrealistic weirdos who just didn't understand the business potential of what they had. You could tell these guys were unprofessional because of their inappropriate attire (no suits). They didn't appreciate the beauty of the bottom line. They didn't have a clue.

What's wrong with this picture?

If this were just a matter of disagreement over clothing styles — like the ones most teenagers have with their parents at one time or another — it would be one thing. But the tone of this distinction and of discussions surrounding it are more moral than sartorial, with overtones of moral superiority on both sides. Creativity, imagination, and risk taking are usually much preferred over plodding mediocrity, as I think most people would agree. However, it doesn't follow from anything that these characteristics, or any others, are necessarily reflected in dress. The plain fact of the matter is that not everyone in a suit is slow, unimaginative, or the devil incarnate; not everyone dressed more casually is brilliant, witty, and on the side of the angels. Praise and censure can, with justification, be leveled at and handed out to both sides. The reality — the bottom line, if you will — is that the industry needs both groups — and it would

help if they could talk to each other without spitting.

The rift within the Macintosh community is not only a matter of the suits and the nonsuits. If that were so, the solution to the problem would be a simple dress code. The split also roughly follows the less easily reconcilable line between the old guard and the new. Many people associated with the Mac from the beginning have taken the (unreasonable) view that success has spoiled their machine.

Cast your mind back to the 128K Mac. It had no slots; it had no SCSI port; it had one (count it) 400K disk drive. If you had a document more than ten pages long, you couldn't save it all on the same disk; if you so much as laid a screwdriver down alongside the case, you voided your warranty. There was virtually no software for it. On the plus side, it didn't look like a computer, it didn't work like a computer, and it had this nifty

## Suits and Tie-Dye

weird clothes (suits) and appreciated concepts such as “pressed” and “tie.” They didn't have a clue. (My friend and colleague Robert Wiggins, although pictured here in suit and tie, seems to lean toward the folks in the jeans and T-shirts —

spray-paint can in MacPaint. It was a computer that only a mother could love, and thank God there were some mothers out there to love it. In the beginning, only a farsighted few understood and appreciated the Mac — and they were all proselytizing like crazy.

Now that the evangelical work has paid off, the preachers are no longer part of a special visionary class. There's a big difference between preaching to the unconverted heathen and preaching to the choir. It's difficult to maintain that special us-against-the-uninitiated attitude when everyone starts to agree with you. On the other hand, a number of the suits — sorry, new blood — would like to clean up the industry by shutting out the scruffy, wild-eyed folks in jeans and running shoes. The feeling is that too much hair is bad for the Mac's business image.

Both attitudes are shortsighted and — not to put too fine a point on it — wrong. The Macintosh could not possibly have sprung from the minds of people whose vision extended no further than the next quarter's balance sheet. You had to be a little off-the-wall to think something like the Mac would be worthwhile. Copying, cloning, or refining the Mac interface is one thing (three things, actually); thinking it up (and realizing it) in the first place is an-

**T**he plain fact is that not everyone wearing a suit is slow, unimaginative, or the devil incarnate.



BY LOUISE KOHL





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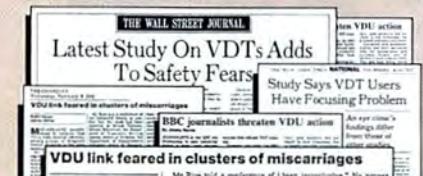
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other kind of thing entirely. The suits owe the T-shirts a lot.

The Macintosh as it was originally envisioned could not possibly have made it into offices as a serious competitor to IBM. The Mac II I'm writing this column on is the result of merging the dream with reality checks. It's connected to a substantial network, it's expandable, and it talks to just about any other computer you can name, as

**T**he success of the Mac in the "real" world is what keeps it around for the rest of us to use in pushing our personal envelopes.

long as someone performs an introduction. It wasn't easy for the early corporate adopters to get the Mac into their offices, either. The success of the Mac in the "real" world is what keeps it around for the rest of us to use in pushing our personal envelopes. Without that success, Macs would have long since joined Commodore 64s in closets all across America. *Without that success, the Mac wouldn't be here anymore.* The T-shirts owe the suits too.

In the early days when Steve Jobs and his wild and crazy crew were developing the Macintosh, the lines were more clearly drawn. IBM people had a white-shirt/blue-suit (and dare I say "lemminglike"?) mentality reflected in their dull but dutiful machines. Folks at Apple were wrapped up in creativity and the forging of new frontiers and had no time for such mundane matters as what they wore. Innovation, not dress code, was the issue. (It's still the issue, for that matter. If that changes, we're really in trouble.)

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that the wild-and-crazy blue-skying almost led to Apple's untimely demise. The Mac came damn close to going the way of the Lisa and taking the whole company along for the ride. It was the business types, not the visionaries, who pulled up out of the dive. It was the

visionaries who gave them something to pull up.

With the Mac's entrance into, and growing acceptance by, the business establishment, those business types — the establishment — are becoming a visible and powerful part of the Macintosh land-

scape. This simple fact won't change to suit (if that's the right word) individual preferences. There's nothing intrinsically wrong with the appearance of the establishment. The establishment is what keeps things going while the radicals explore ways to change things.

And the plain truth is that connectivity, power, and wardrobes notwithstanding, the Mac is still a machine that elicits


**The plain truth is that connectivity, power, and wardrobes notwithstanding, the Mac is still a machine that elicits strong personal responses.**

strong personal responses from the people who use it.

Someone in an aerospace company recently sent me an excellent brochure and calendar that had been produced on a Mac — just because the material had been produced on a Mac. Even at my most open-minded, I can't imagine anyone proudly sending material to an editor just because it had been produced on an IBM PC or a Linotronic.

Maybe that has something to do with the quality and personality of both the Mac itself and its users, no matter what they're wearing.

## ON THE JOBS TRAINING

As I hesitate to let a column go by without mentioning a book, let me recommend *West of Eden* by Frank Rose (Viking Press). It's a well-written and entertaining account of the death-defying days of the Mac's history. 

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think that's so must simply not ever have tried a PC running DOS and Windows, or OS/2 and Presentation Manager.

## MAINSTREAM MAC

Both are large, slow, clumsy beasts, with one foot in the character world, the other in the graphics world. And just as keeping one foot in the canoe and one on the dock gets pretty tough to maintain as the boat slips away from the dock, these half-graphic interfaces are increasingly hobbled by their obeisance to the old world of character-oriented displays while trying to play in the far faster league of the graphic-interface era.

(Not that either Windows or OS/2's Presentation Manager can run on PCs equipped only with character-oriented video displays — they can't. But because they still embrace such clumsy relics of the character-oriented world as long lists of filenames instead of file icons, they feel like refugees, walking wounded from that lost war.)

## Apple's Eroding Authority

**F**or more than two years now, since the first few IBM PC users began to use Windows and it became clear that IBM and Microsoft were jointly developing a new operating system with a front end that looked a little Mac-like, Apple has been waving a big stick at Mac developers whom it catches peering a little too admiringly at that huge DOS market.

"Unfair!" claims Apple. The gist of the argument is that the Mac "look," broadly defined, belongs to Apple and no one else and that developers who've made their fortune (or are still trying to) by riding the long coattails of the Macintosh interface shouldn't sell out to the baddies from IBM. Carrying their expertise in delivering that look along with them, of course.

Or, as we say in Texas, "Yew oughter dance with the one that brung yew."

If it's an argument with a modicum of justice, it's also an argument without a shred of business sense. Why should a software vendor choose to limit its product line to software for just one computer — unless that vendor chooses to make that part of the business plan?

Apple has lots of lawyers sitting around — far too many, some would say — and because those lawyers well understand the antitrust implications of excessively visible or high-handed actions, Apple isn't likely to do something stupid. At least not in public. But the sub-rosa stuff sure isn't winning it any friends among its "developer partners," as the Apple software evangelists used to say.

A basic flaw in Apple's attitude is the idea that OS/2 with its new Presentation Manager interface — or for that matter, Windows in any of its incarnations — delivers to computer users anything like the ease of learning, ease of use, or performance of the Mac's System/Finder duo. People at Apple who

But I digress. Put simply, Apple has raised a lot of hell about people who make it easy to get supposedly Mac-like stuff onto PCs. Just ask the house counsel at Hewlett-Packard and Microsoft, who are still slogging through the pretrial paperwork of Apple's interface-infringement suit against them.

All the foregoing is very much in my mind as I ponder Apple's probable reaction (at least internally) to the shipment by Bawamba Software of a new package of conversion utilities that allow Mac developers to port their Mac programs more or less easily over to OS/2 and DOS.

Even worse (from Apple's vantage point) is that the programs, once converted, come up on IBM PC screens not under the OS/2-Presentation Manager interface or the DOS/Windows interface — but looking and feeling (if you'll forgive the expression) just as they did on the Mac.

Ouch!

Bawamba's Multiplatform Compatibility Package (mercifully, MCP) is a grab bag of about 600 C-language subroutines that provide to the PC the "services" in the Mac's ROM.

The more closely a Mac program follows Apple's recom-

**W**hy should a software vendor limit its product line to software for just one computer?

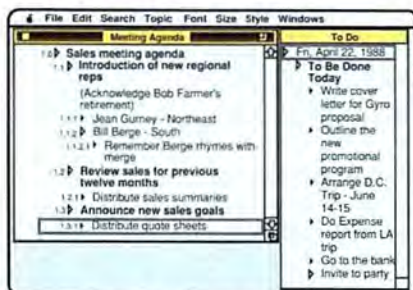


BY JIM SEYMOUR

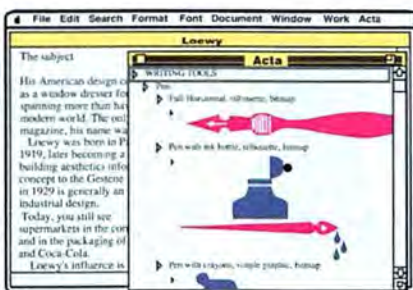


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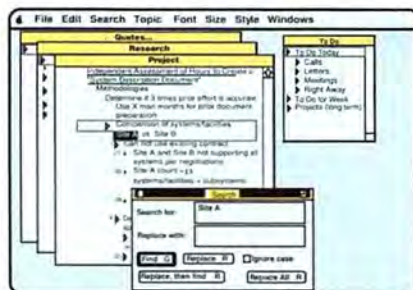
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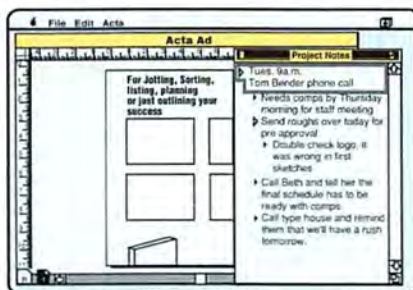
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mended programming guidelines, the more easily it converts to the worlds of DOS and OS/2.

Double ouch!

Needless to say, the Bawamba package has attracted a lot of attention in the developer community. I don't have any word yet on how buggy this software is or on performance comparisons for converted programs running on PCs versus those same programs running on their native Mac, so let's not go too far with this.

But it does make me ask: At what point is Apple going to have to acknowledge that other companies have commercial rights and legitimate self-interests? And then accept that Apple can't control the whole world?

Maybe it's permissible, in some sense, for Apple to do some arm-twisting with developers with whom it has maintained a close relationship and whose product lines are basically Macintosh-software lines. But should Apple be able to reach out to the Bawambas of the world and try to restrain their actions as well?


I want to be clear that, as of this writing, Apple has done nothing of the sort. But I am not alone in waiting for the other shoe to drop here. Will it fall?

It has been in Apple's own interest to protect the Mac BIOS to the death. That's kept the clones out of the market, perpetuating Apple's very high prices and the resulting stunningly high gross margins.

And maintaining a loyal group of third-party software developers who see their own economic interest tied inextricably to Apple's success has also been a part of that strategy.

Apple has to face the reality that whether or not it's able to assess accurately the degree of threat from other developers' products — and the Hewlett-Packard/Microsoft lawsuit suggests it's not yet gotten very good at that — some developers are going to run right at Apple with products such as Bawamba's MCP.

And are going to enjoy success.

Whatcha going to do, Apple? 



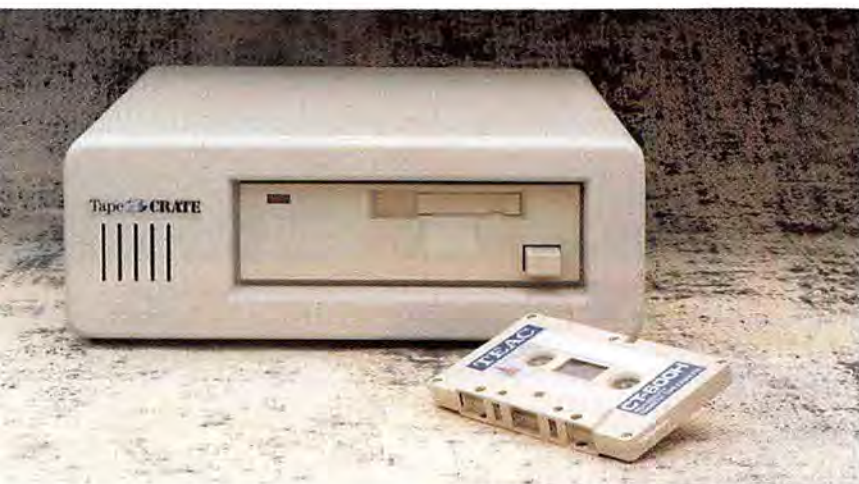
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In olden times (around 1985), the idea of a Macintosh-only trade show was thrilling and exciting. The Macintosh community was small and truly a community. People planned their calendars around Expos and made pilgrimages to San Francisco and Boston to share their enthusiasm for the Macintosh with other true believers. The show floors were like Persian bazaars: row after row of tiny booths with strange and interesting things to show and barter. Macophiles wandered the aisles in jeans and T-shirts in a state of perpetual excitement and passed freeware and shareware from hand to hand like bottles of apple wine. People in suits felt out of place.

## Overexposure

But time and tide wait for no man, and over the years the Macintosh tide has definitely turned toward business. The Macintosh community, once a small neighborhood, has burgeoned into a vast melting pot in which the original enthusiasts have become just a small subgroup among the business users, desktop publishers, and other new converts.

The Macintosh market is now large and diverse, and the shows just aren't fun anymore. They're too big, too sprawling, too crowded — and there are too many of them. The "general audience" Macworld Expos added a third location this year, and the two Comdex shows have sprouted concurrent Macintosh-only shows like second heads. Then there are the more targeted shows such as the Macintosh Business Conference & Exposition (three locations), although they are smaller and less heavily attended and easier to get something out of (so far).

I used to really look forward to attending these shows. But as the shows have grown, the fun has shrunk, to the point where I didn't bother to attend the Boston Expo last year, and people who did attend told me how lucky I was to have missed it. This year I went to the San Francisco Expo in January and was overwhelmed by the size of the show, spread over two locations. An extra "industry" day has been tacked onto the beginning of the last few Expos, but this year the crowds on industry day were as bad as they were on the general-public days last year.

There were actually some high points at the January Expo, such as Apple's introduction of the Mac SE/30. It's an interesting machine, returning as it does to power with a small footprint, but it wasn't the laptop, so people yawned. Silicon Beach announced SuperCard, which blends artistry with HyperCard programming and expands on it with elements such as color and varying card sizes. No one yawned at this one, but it wasn't ready to ship yet.

One of the few really exciting products at the Expo came out

of one of those small booths that were few and far between and hearkened back to the early days of Macintosh enthusiasm. The WristMac, a Seiko watch with a cable for connecting to a Mac and a HyperCard interface program, thrilled and delighted the crowds. Although it's hardly a Mac on a wrist, it does allow you to download 80 "screens" of two 12-character lines (especially handy for telephone numbers) and program in alarms with memos. It even interfaces with programs such as Focal Point II, so you can download reminders. One of the reasons this product seemed reminiscent of the old days was that the whole project was undertaken by a bunch of

old-line Macintosh enthusiasts who had all met via CompuServe's MAUG forums.

Many smaller gems were to be found among the teeming hordes. Project managers got a preview of MicroPlanner X-Pert, coming in late summer, which builds on MicroPlanner and adds dozens of improvements and enhancements, ranging from a report writer for designing custom reports to a minute-by-minute scheduler.

Telecommunicators who made the trek to Brooks Hall from the Moscone Convention Center saw a preview of CompuServe Navigator 3.0, which takes advantage of CompuServe's new Host-Micro Interface. Back on the main floor in Moscone, Hayes was showing version 3.1 of Smartcom II, which adds on-screen macro buttons and automatic script generation, and Software Ventures was previewing MicroPhone II 3.0, an enhanced version of that popular communications program.

As the show floor gets more crowded and spreads over more locations, some companies are focusing more on hospitality suites, where they can show their wares to industry insiders away

## PINSTRIPE MAC

**The Macintosh market has become large and diverse, and the trade shows are too big and crowded to be fun anymore.**



BY ROBERT R. WIGGINS



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## How To Eliminate Holes In Your Hard Disk

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from the hustle and bustle of the crowds. Farallon had such a suite right in Moscone, where it was showing its entire line, including the incredible Screen Recorder (a product you must investigate if you're involved in training), as well as previewing a new "groupware" program for shared editing and commenting on any document. Layered had a suite in a nearby hotel, where it demonstrated its new middle-range accounting program, AtOnce, which should be a real winner in an uncrowded category. The new version of Layered's high-end system, Insight, which now features full import/export capability, allows sophisticated front-end systems to be developed with databases such as 4th Dimension.


Finding these significant new products amid the chaos and hoopla was not easy, even though I had been inundated with press releases, product literature, and invitations in the weeks before the show and had the advantage of being able to do some prescreening. For the average Macintosh user walking in off the street, the show must have been overwhelming. It was just too big, too sprawling, and too crowded (not to mention the brilliant stroke of scheduling the show to end on Super Bowl Sunday in what was to become the winning city, which made gridlock a certainty that night).

### PINSTRIPE PICKS

Some other products seen at the Expo (in those smaller booths) that you may want to investigate if you use your Macintosh for business:

**Acta Advantage** (Symmetry). The popular outlining desk accessory now comes with an application version as well (great for those MultiFinder environments).

**INITPicker** (Microseeds). A simple Control Panel device that lets you pick and choose which INIT programs you want to run at startup. Excellent for problem determination.

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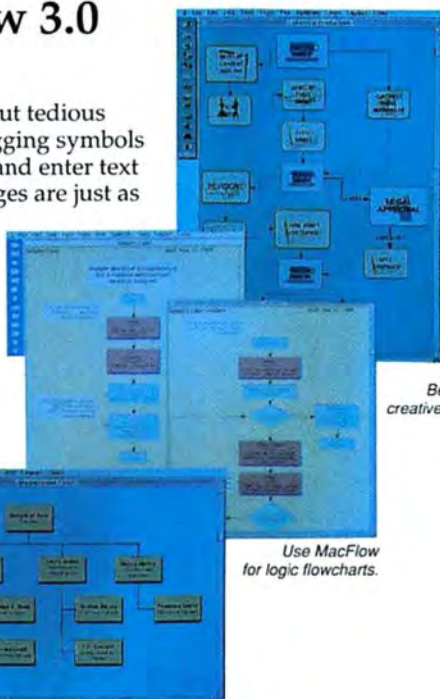
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# Scanning the Color Horizon

**24-bit scanners have arrived, capturing a brave new world of color riches and challenging desktop explorers in the process.**

**Y**ou think you have scanning all figured out, eh? You've made the transition from black and white to gray scale. You've learned all about pixel depth, brightness and contrast, sharpening and blurring, digital halftoning.

Don't get overconfident. Color's finally here. You thought 8 bits was hard to handle; now you have 24. And you must add *hue*, *saturation*, and *brightness* to your desktop vocabulary.

Not only new words but also new problems arise when you enter the world of scanned color images. For example, what you see on your screen,



**BarneyScan**



**Truvel TZ-3BWC**

**By Henry Bortman and the MacUser Labs Staff**



particularly if you have an 8-bit display, may be a mere approximation of what you will get when you print to a color printer or do color separations to send to an offset printer.

Some of the current crop of scanner and color-correction applications support the RasterOps 24-bit color format; others don't. Others won't support 24-bit color until Apple releases its new 32-bit Color QuickDraw software. What's more, some of the software that comes with color scanners presents users with an interface that is more of an impediment than an aid to getting the job done. The results can be

unexpected — although the promise of color scanning remains an enticement in the midst of its difficulties.

*MacUser* recently put half a dozen 24-bit color scanners through their paces. We looked at two flatbeds, one from Truvel, the other from Sharp. Since the Sharp scanning engine is also marketed by Howtek and New Image Technologies — and each unit comes with its own software — we tested their packages as well. To round out the picture, we checked out slide scanners from Howtek and BarneyScan.

The results were amazing, especially with a 24-bit video display and soft-

ware that could take advantage of it. If you think color on the Mac is just desktop decoration, take a look at what any of these scanners can do. You'll be impressed.

But they're also slow, some of them agonizingly so. They eat memory and disk storage for breakfast. You'll want at least 5 megabytes of RAM, preferably 8; and the largest hard disk you can find won't be big enough. One scan can take up as much as 24 megabytes on disk. The hardware is all on the cutting edge, so a lot of it works sometimes rather than always. And you have to wonder what people were thinking



**Howtek Scanmaster 35**



**Sharp JX-450 (shown)  
Howtek Scanmaster  
New Image MacScanColor**



## Scanning the Color Horizon

about when they designed some of the accompanying software packages. Probably IBM PCs.

Still, these devices and others soon coming to market promise to have a profound effect on how color images are handled in the commercial printing world. If you're into desktop presentations, you may take exception, but — let's face it — when it comes to disseminating information, including images, we're still in a Gutenberg world. The final resting place of the overwhelming majority of the images these scanners are going to scan will be the printed page. People will scan colorful things — I didn't say *pictures*, because Truvel's flatbed can scan three-dimensional objects as well — and then will use computers to correct the colors and generate separations for printing presses.

### GOOD THINGS COME IN THREES

**Sharp JX-450:** The Sharp JX-450 flatbed is first in line here because its scanning engine is at the heart of half of the scanner products we tested. Although Sharp sells the scanner directly, along with a National Instruments GPIB NuBus card and an appropriate software driver, it doesn't really claim to provide a ready-to-use scanning package. Sharp's idea is that vendors will write JX-450 drivers into their color applications, with all the added software control that implies.

The JX-450 is a 24-bit flatbed capable of scanning images up to 11-x-17 inches. It has variable resolution with a maximum of 300 dots per inch (dpi). Don't plan on scanning 11-x-17-inch images at 300 dpi, however. To do so would require 48 megabytes of memory — or virtual disk spooling, which none of the configurations we tested provided. Storing such an image on disk likewise requires 48 megabytes (you can get six images onto a 300-megabyte drive).

Admittedly this example is extreme, but the 3-x-4-inch image of food that served as a test in this article ate up 2.3 megabytes when scanned at 300 dpi. For a not-particularly-large image, that's a lot of disk space. If you have to move these images from one location

to another, you can forget floppies, even the new 1.4-megabyte high-density ones. You'll have to consider a cartridge drive.

The Sharp scanner works by moving a glass plate across a set of three colored fluorescent lights, one red, one green, and one blue. The lights flash alternately in rapid succession as the glass plate moves the image. Even at 300 dpi, the scanning process is pretty quick, well under a minute. The variable-speed motor makes lower-resolution scans finish even faster.

The scanner hardware lets the appropriate application control resolution, sharpness, scan speed, image area, and some color correction. In lieu of shipping its own application with the JX-450, Sharp ships a programming manual, which is about as un-

Mac-like as you can get, and a list of other vendors' applications that can drive the scanner (it's an impressive list — see sidebar, "Soft Wares for the Sharp JX-450"). The extent to which these applications take advantage of the scanner's features varies; so does the convenience of their interfaces. But all of them provide enough control over the Sharp to let you capture color pictures.

One of the least charming aspects of the JX-450 is its interface to the Mac. It uses GPIB (General Purpose Interface Bus), a standard in wide use by Hewlett-Packard and other manufacturers of computer-controlled instrumentation but physically one of the clunkiest hardware interfaces around. Sharp ships the scanner with an NB-GPIB board from National Instru-

## Soft Wares for the Sharp JX-450

**S**harp has chosen to market its scanner, the JX-450, without the custom scanning application that typically accompanies such hardware. Instead, the company encourages vendors of color software to incorporate drivers for the JX-450 into their applications. The features provided by these various applications vary. Here's a rundown:

### ChromaScan

(*Imageneis*, 901 N.E. Loop 410, Suite 630, San Antonio, TX 78209; (512) 824-1746).

This \$195 program provides access to the full set of the JX-450's features. Its prescan window reproduces the positioning marks on the scanner bed, and its sizing rectangle is well designed, making it easy to select a specific area to scan. It allows you to capture images as black and white, gray-scale, 8-bit color with several dither options, or 24-bit color (RasterOps format). Its basic color controls are easier to use than similar controls in many other programs. All in all, it's a good value, which is why we chose it to produce the test images for the Sharp scanner that appear in this article. One major criticism: it saves files in PICT2 format only. We'd prefer to see TIFF added.

### LaserPaint Color II

(*LaserWare*, P.O. Box 668, San Rafael, CA 94915; (415) 453-9500).

Driving the Sharp scanner is only one of the tricks this \$595, well-endowed program can perform. It captures images in 24-bit color (RasterOps format) or in one of two 8-bit dithers. It also provides a full-featured drawing and layout environment and can do color correction and separations. Many graphic artists swear by it, including some in *MacUser's* art department. Others find the interface, which is far from standard, too difficult to work with.

### PixelScan

(*SuperMac Technology*, 485 Potrero Ave., Sunnyvale, CA 94086; (408) 245-2202).

Now included as a free utility with PixelPaint 2.0, this basic scanning program automatically translates 24-bit color images to 8-bit. PixelPaint 2.0 cannot import or work with 24-bit images (although future versions of PixelPaint will undoubtedly have this capability). PixelScan saves files in PixelPaint, MacPaint, and PICT



ments, a cable to connect the board to the scanner, and a software driver. (NB stands for NuBus, which many among you will realize means you must have a Mac II, IIfx, or IICx to use this scanner. No word on whether anyone plans to implement an SE/30 Direct Slot GPIB board that will work for this purpose.)

The GPIB interface does have one redeeming feature: you can easily link several cables by screwing one directly into the other. But that's the only nice thing I'm going to say about it. In the case of the NB-GPIB, the connector doesn't stick all the way out of the back of the Mac, so you have to attach an adapter before you can attach the cable. Getting the NuBus card and adapter positioned correctly is difficult, but you have to do it only once,

and then it gets hidden forever.

Then there's configuration. Fortunately, Sharp preconfigures the GPIB (by setting device addresses and the like) in the driver it sends with the scanner. But if you are unlucky enough to have to reconfigure it, you will have the joy of using such delightful programs as IBIC and IBCONF (the latter, I presume, stands for "interface bus configuration"; don't ask me what the former stands for). These programs let you check on whether things such as "Assert REN when SC" are set properly. Since the DIP switches on the scanner I received were set to the wrong GPIB bus address, and since the software package I was using to scan didn't know how to talk to scanners with a nondefault address, I became very familiar with these two

hackers' utilities. I can think of better ways to spend my time. If you're lucky, you won't have to go near them.

Documentation for the Sharp is likewise lacking, most of it being for software developers rather than users. It does, however, get you up and running with your scanner, and Sharp candidly admits that what it is selling is a back end (the scanner), not an elegantly designed Mac front end (software).

All these problems aside, the performance of the scanner is quite good. It does consistently well across all the applications with which we tested it. The colors appear a little dark, but detail is maintained well (see the samples). The scanner, NuBus card, and software driver come to \$7,545, but, depending on what you plan to use the scanner for, you will probably have to figure in the cost of additional software (see sidebar, "Soft Wares for the Sharp JX-450").

**Scanmaster:** Howtek also markets Sharp's scanner, with its own version of the National Instruments NB-GPIB board and its own driver, calling it the Scanmaster. The company also provides a full-featured front-end application, MacScan-It. To use MacScan-It, you must have Howtek's board and driver; the program won't work with Sharp's. And setting up the Scanmaster involves navigating a guided tour of IBCONF. It's well documented, but I fail to see why it's necessary. Fortunately the tour doesn't last long. When it's over, you get to the fun part: scanning.

Howtek is currently shipping version 1.1 of MacScan-It. Despite the greater-than-1.0 numbering, a warning appears on the screen when you launch the program, telling you that you are working with a less-than-finished product and promising you a free upgrade later. Howtek's price for its package is \$8,195, which is \$630 more than what Sharp charges. The only difference in what you get is MacScan-It. Is it a \$630 application?

I'd have to say no. MacScan-It is one of those applications that does a great job of going halfway. Take its Preview function, which performs pre-

formats. Sharp provides PixelScan free of charge to anyone who buys a JX-450 from the company, but you have to request it.

#### **Studio/8 Scanner Installer**

*(Electronic Arts, P.O. Box 7578, San Mateo, CA 94403-7578; (415) 572-2787).*

Available free from Sharp to registered owners of Studio/8, this driver gives Studio/8 the ability to drive the JX-450 directly from within the program. It captures 8-bit, gray-scale, and color images. Studio/8 is a full-featured color paint program with some stunning special-effects powers.

#### **ImageStudio 1.5 Scanning Module**

*(Letraset USA, 40 Eisenhower Drive, Paramus, NJ 07653; (201) 845-6100).*

Available free from Sharp to registered owners of ImageStudio 1.5, the scanning module allows ImageStudio to drive the JX-450 to capture gray-scale images.

In addition, Visionary, an \$8,000 program that provides a link between QuarkXPress and Scitex prepress systems, and Laser Separator, a \$6,000 color-correction and -separation program, can drive the Sharp directly. We even got wind of X Scan, a British scanner driver for the JX-450 that allows color scans to be displayed in HyperCard. And then there's ColorStudio — but since, at press time, it hadn't been announced yet, we can only speculate.

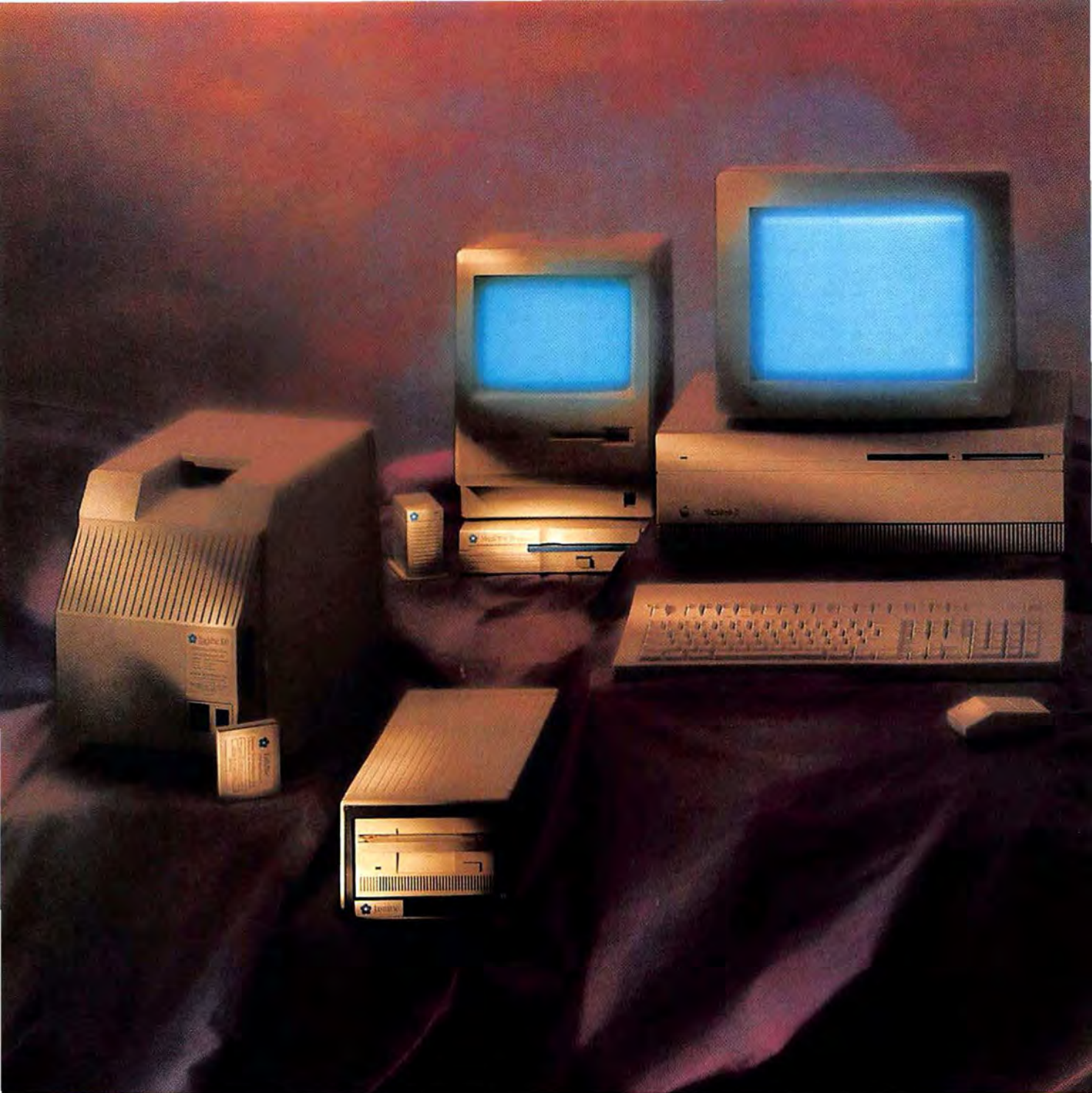
**Visionary** *(Scitex Graphics Arts Users Association, 8 Oak Park Drive, Bedford, MA 01730; (800) 858-0489).*

**Laser Separator** *(Graphics Applications, Inc., 618-E Gulford College Road, Greensboro, NC 27409-2109; (919) 852-1608).*

**X Scan** *(Pixel Software, Seventh Floor, Imperial House, 1519 Kingsway, London, England, WC2B 6UN, 01 379 5942).*

**ColorStudio** *(Letraset USA, 40 Eisenhower Drive, Paramus, NJ 07653; (201) 845-6100).*  
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## Scanning the Color Horizon

view scans at 75 dpi, regardless of the resolution you have selected for your final scan, making preview scans go much more quickly than they otherwise would (someone was paying attention to detail here). But rather than letting you click and drag a rectangle over the preview image to select the final scan area, MacScan-It gives you a standard Mac window, complete with title bar, which you must position and resize to make your selection. This window is difficult to line up properly.

Or look at how MacScan-It handles color correction. There's more power here to do simple color correction than is available in most other scanner capture programs. But MacScan-It's Color & Contrast menu also contains such counterintuitive items as Linear Color Lookup (which means "default"). Furthermore, the menu isn't organized in a way that makes clear which selections affect the scan itself, which affect merely the screen display, and which affect the image you save to disk. Why do some developers put so much energy into adding features to their products and so little effort into making it easy for users to use them?

My biggest complaint about MacScan-It is about the way it handles resolution. You can independently set input resolution, output resolution, and output size. This flexibility may seem like an advantage, but I found it consistently irritating that by selecting 300 dpi from the resolution menu, I was *not* guaranteeing that the image I saved to disk would have the same resolution, because the program defaults to 72-dpi output (the resolution of most Macintosh screens). It might seem like this stuff should be easy to figure out, but I never quite got the hang of it. Don't look for much help from the MacScan-It documentation, either. It has the same shortcomings as the user interface.

**MacScanColor:** Then there is New Image Technology's MacScanColor (again with the Sharp scanning engine). This time, instead of the National Instruments GPIB board, you get New Image's own board (with a more convenient connector and cable). You don't need a special driver, nor do you need to mess with IBCONF. You also

get MacScan software. This complete package (scanner, New Image GPIB card, and MacScan software) costs only \$25 more than Sharp's package (the scanner plus National Instruments' GPIB card). The New Image package is also about \$600 less than the Howtek package. Is Howtek's MacScan-It better than New Image's MacScanColor? Yes. But \$600 better? Hardly.

Even so, the question arises whether the New Image GPIB card is a full-featured implementation of GPIB that will work with other such devices. The early version of the card had some problems that prevented it from working with some of the applications (such as ChromaScan) that did work with the National Instruments card. Those problems have been fixed, but we can't say whether others might be lurking unnoticed in its silicon recesses. Unless you plan to use the card to talk to any GPIB devices other than the JX-450 scanner, it won't make much difference anyway.

The MacScan program is not going to win any awards, either. MacScan was originally written to drive New Image's black-and-white and grayscale scanners and was merely modified to accommodate the JX-450 color scanner. Although the 24-bit color images it captures are equal in quality to those captured by other software that drives the same device, there is one serious shortcoming: MacScan doesn't let you select a degree of image sharpness prior to scanning, a feature that most other applications that drive this scanner do support.

Nor does it have a preview function. It has a Margins window, from which you drag the sides of a selection rectangle to indicate what area you want to scan. But the scanned image appears in a separate window, not in the Preview window, making fine-tuning difficult. If you are short on memory and trying to squeeze every last pixel you can out of a scan while maintaining maximum resolution, this system is a major hassle. By way of compensation, MacScan does give you a tool that lets you crop an image after it is scanned, a handy feature that MacScan-It lacks.

The residue of MacScan's origins as



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a program for driving monochrome scanners is not handled elegantly. MacScan has an extensive, albeit confusing, editing toolbox for editing black-and-white images. The tools may be confusing in black and white, but they don't do anything when you use the program with the Sharp color scanner — they're not even grayed out. You can select any tool you like, even get its appropriate drawing cursor on the screen, but it does nothing. Furthermore, every time you launch MacScan, it clobbers the Mac's color-lookup table. Everything on the desktop turns black and white.

In conclusion, if I were going to buy an incarnation of the Sharp scanner, I'd probably go with the New Image package, and, if MacScan weren't adequate for my needs, I'd get ChromaScan, a \$199 program from Imagene-sis (see sidebar, "Soft Wares for the Sharp JX-450"). The Sharp scanner with ChromaScan is probably the best price/performance combination available for the JX-450.

### TRUE STORIES

Then there is the Truvel TZ-3BWC, the other flatbed in the bunch we looked at. Like the JX-450, Truvel's scanner can capture 24-bit color images in sizes up to about 11-x-17 inches (the Truvel can actually do 12-x-17) and can also capture monochrome images. But that's about as far as the similarity goes. The TZ-3BWC design is completely different from that of the Sharp. With the Sharp scanner, you place your image face down on a glass, and the scanner's lights and lens move underneath it, inside the scanner. Truvel puts the lights and lens on a moving arm that rides above the scanner bed, on which images are placed face up.

The latter approach offers significant advantages. The lens of the Truvel looks just like a zoom lens for a 35mm camera. By adjusting it, you can achieve scanning resolutions up to 900 dpi, three times that of the Sharp scanner. The Truvel scanner can also scan three-dimensional objects, which the Sharp cannot even dream of doing.

I was really looking forward to working with this scanner. It's neither inexpensive, nor small, nor quiet, but it

## 24-bit Capture and Display

**A**ll the scanners we tested for this article can capture 24-bit color images. Already "24-bit color" is becoming one of the buzzwords of the year and will buzz even louder when Apple releases its new 32-bit Color QuickDraw later this year.

So what does all this mean to mortals?

Let's start with black and white. As you probably know by now, a monochrome image, such as the kind you see on a Mac Plus or SE, has pixels that can be only black or white. To simulate shades of gray, the display sets certain dots as black or white in a specific pattern by a process called dithering. You can see this pattern clearly if you go into the zoom mode in any black-and-white paint program.

With the appearance of the Mac II, both gray scale and color became available. Instead of having only 1 bit of information for each pixel on the screen, now the Mac had 8 bits. An 8-bit, gray-scale monitor uses these 8 bits of information per pixel to display 256 shades of gray.

An 8-bit color monitor uses the same 8 bits to display 256 colors. Color monitors have three electron "guns," all firing at the screen at the same time: one red, one green, one blue. All the colors you see are created by combinations of these three primary colors. (When you're dealing with monitors, red, green, and blue are the primary colors — not red, blue and yellow).

But 256 is not a lot of colors. Just as monochrome monitors must use dithering to create an illusion of gray, so 8-bit color monitors use dithering to simulate more than the 256 colors they can actually display.

Fortunately, the Macintosh can display more than 256 colors. In fact, it can display more than 16.7 million colors — if you have a 24-bit video card. With 24 bits of color information per pixel, you can have 8 bits each for red, blue, and green. The difference is dramatic.

Why spend all this time talking about displays in an article about scanners? Because what a scanner does is just the opposite of what the display does.

When you scan with any of the devices we tested, you can save a 24-bit color image, 8 bits each for red, blue, and green (RGB). The scanners use various means to capture the RGB information. The Sharp, for example, has lights of three colors and makes a single pass over the image, flashing the lights alternately. The Truvel has a single light and a rapidly rotating filter wheel with red, blue, and green filters. It also captures the image in a single pass. The two slide scanners make three separate passes over the image, once each for red, blue, and green information. The three 8-bit pieces of color information for each pixel are then combined into a single 24-bit value that can be displayed and stored on disk.

When you display your scanned image, if you have an 8-bit monitor, your Mac dithers the image to create an approximation of the 24-bit values that are really there. How it dithers depends on the particular application you're using. If you have 24-bit video, however, you can see the "true" color of each pixel.

For the most part, we used an 8-bit display to work with the images we captured with the scanners tested. Our experience led us to the conclusion that, if you are serious about working with color scans, particularly if you are going to try to do any color correction on your Mac, a 24-bit video card should be high on your list of items to buy. With 8 bits, you simply won't be able to see colors well enough to do critical color work, no matter how good a job of dithering your software does.

Although RasterOps is currently the only 24-bit color game in town, the format it uses for internally storing 24-bit information is different from the format Apple has said it plans to use in its new Color QuickDraw. By the time you read this, Apple will hopefully have firmed up its plans for releasing this new system-software addition.

Several vendors — including RasterOps — are already developing 24-bit boards to support this new Apple standard. These boards will be released as soon as Apple releases its code. And you can bet that 24-bit versions of practically any color software package you can name will be available shortly thereafter. If you're going to buy into 24-bit color, go with the Apple standard. If you can't wait and want to buy the current RasterOps product, get a clear commitment on the upgrade policy; make sure you won't get left behind when Apple's new software comes out.

— Henry Bortman



# Get The Picture?

Illustration: Cynthia Marsh



**IF** you're not using the Microtek MSF-300G flatbed scanner in your design production, you're not getting the whole picture. This gray-scale scanner allows you to capture images and store them in your computer, where you can manipulate and print them out on a laser printer or phototypesetter.

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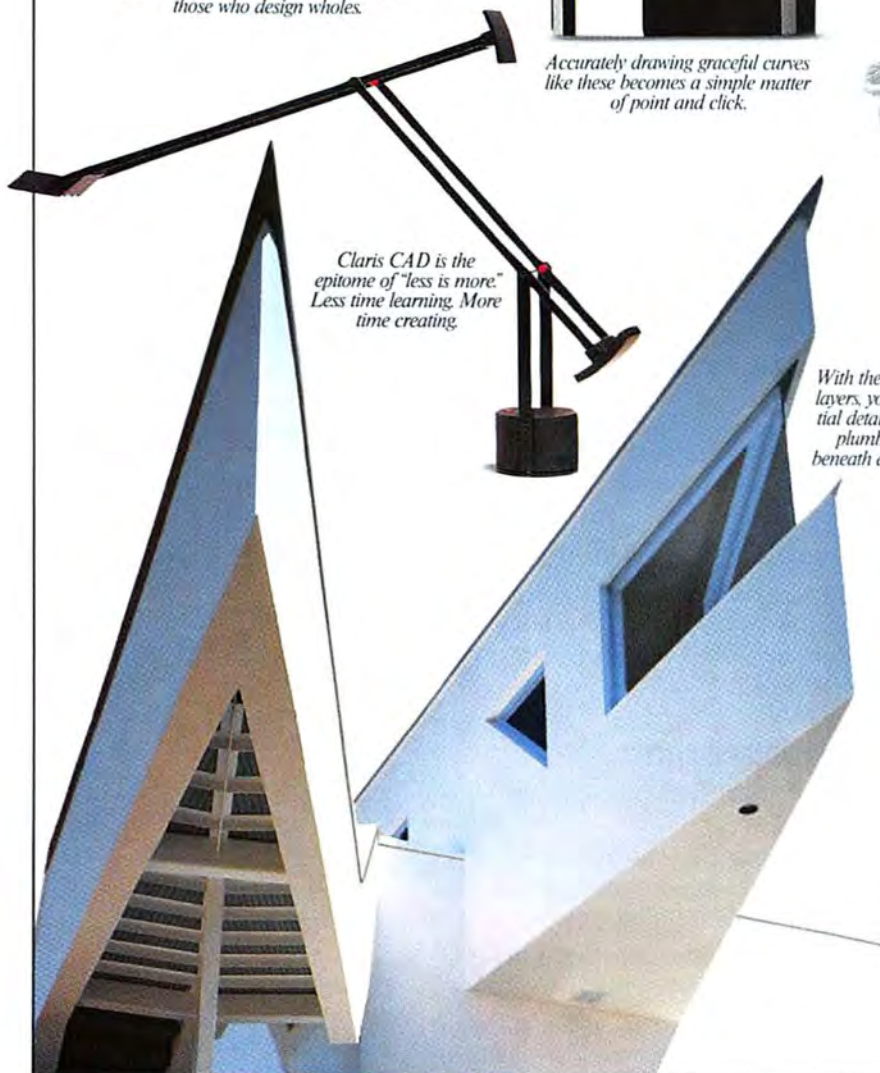
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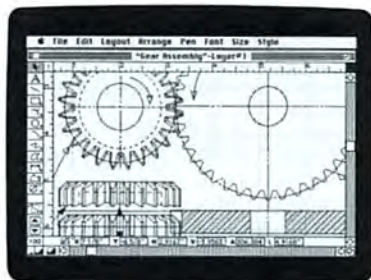
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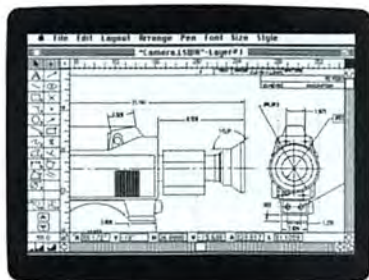
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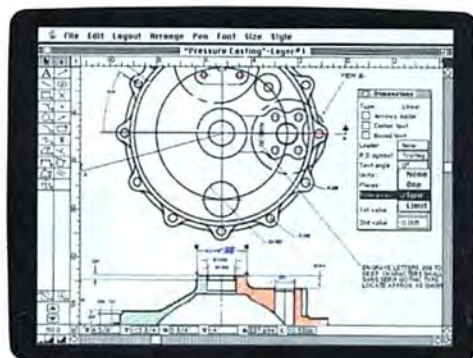
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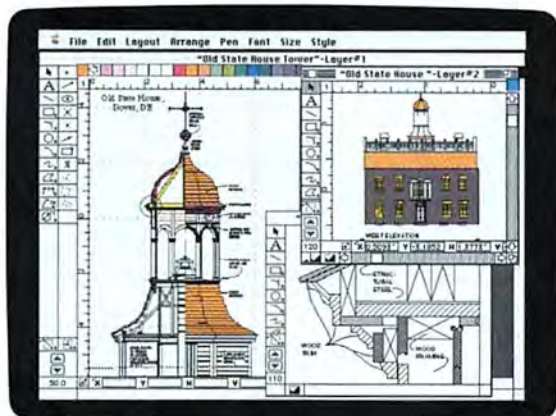
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## Scanning the Color Horizon

has tremendous potential. But we did have a reliability problem. The first unit we received died after a few weeks of not-very-intensive use. So Truvel sent another unit, complete with a service technician, to install and set it up. When he left, everything scanned with a pink cast.

The third unit we received worked much better and came with a slightly newer version of the TruScan software. The colors it captured were much more accurate than the previous pinks — roughly equivalent to, though different than, the colors captured by the Sharp scanner. You know what they say: third time's a charm. I hope that this final unit more accurately represents the units that Truvel is shipping. If so, the company has an excellent hardware product.

Setting up the Truvel is reasonably simple. All you have to do is install the lens-moving arm into the base and plug a SCSI cable from the Mac into the interface box and another cable from the box into the scanner.

You must also go through a one-minute calibration procedure each time you turn on the scanner, change the dpi setting on the lens, change focus, or install or remove the Picture Pac. The Picture Pac is a handy optional copyholder with a glass lid. It's great for pictures that like to curl up at the edges.

Once your scanner is calibrated, you'll probably want to prescan your image, which you do from TruScan's Scanner Area window. This feature could use a little work. My main complaint is that the scanner doesn't have a variable-speed motor. That's not the software's fault, but it means that it takes as long to prescan an image — even though it's a low-resolution scan — as it does to scan at 900 dpi. If you have a large image, you can go get a cup of coffee while you wait for the prescan to complete. And once it's begun, you can't stop it (or a regular scan) by pressing Command-period. You can either wait for your scan to finish or reset your Mac.

Fortunately, when you do a regular scan, you can save a selected portion to disk. My recommendation: don't bother with prescans; just do a normal scan

on an area that you know is large enough to contain your image and then select and save the area of interest.

This method works except when you are tight on memory, but Truvel offers a solution to the memory problem. The TIB Buffer Box combines a built-in SCSI port, an internal hard-disk drive (45-megabyte removable, 80-megabyte fixed, or 120-megabyte fixed), ports for attaching two Truvel scanners (for those of you with a lot of images to scan or money to burn), and a port for attaching an external hard disk. Why all the hard disks? Because the TIB box gives you the ability to do background scanning to a hard-disk buffer, and the more hard disks you have available, the more you can scan.

This option can be a cost-effective alternative for those short on RAM. It

allows you to run TruScan software with as little as 2 megabytes in your Mac, while permitting you to scan images larger than those you could capture with 8 megabytes of RAM and no buffer box. (Truvel also offers a \$995 Zebra Board option, which enhances the sharpness of monochrome line-art scans.)

TruScan software is another example of Mac software that follows the letter but not the spirit of the Mac interface. It has a long way to go to be intuitive. It's a classic case of engineering types — or whoever made the decision — putting their technoid stamp on a software interface that should have been designed with users in mind. For example, to get your image oriented right-side up in the scanned image window, you have to put it upside down

## Getting What You See

In a black-and-white or gray-scale graphic environment, the tones you see on-screen are close enough to what you'll see on paper. The only significant difference between screen and print may be the overall contrast. But life is not that simple in the color-graphics world. An image that appears on a color monitor seldom matches the printed version. If you compose and display all your work only on-screen, you needn't concern yourself with such discrepancies, but if your work sees print, you can take steps to ensure the color fidelity of the final output.

Color monitors add their own base color to an image — typically extra blue, but sometimes green or red prevail. You can tell your monitor's color bias by seeing how it renders whites. Typically, a monitor's white is cool, but we're so accustomed to that version of "white" that we ignore its high blue content. Variations exist among monitors from different manufacturers, different models from the same manufacturer, and even identical models.

Some color-graphic applications offer the option of specifying colors by their Pantone numbers or by percentage of cyan, magenta, yellow, and black. With those options, you can compose your work on a black-and-white screen, *knowing* that what you see on-screen is not what will print. With graphic programs in which you select colors based totally on their screen appearance, you're at the mercy of your monitor. You have several options for better screen/print fidelity:

### ADJUST THE HARDWARE

If your monitor's whites are noticeably skewed toward some color, you can electronically adjust the monitor to display whiter whites. This procedure may be as simple as tweaking externally mounted controls for red, green, and blue intensity. If your monitor lacks external controls, and most do, you can have it adjusted by a dealer, who will do an inside tweak with the power on — not generally a safe procedure for untrained mortals. If you can arrange it, try to be present during the adjustment so you can have your say.

### USE YOUR SOFTWARE'S TALENTS

FreeHand's approach to color-display correction uses a preprinted color card and a special Color dialog. You select an on-screen color and use the Mac's color wheel to adjust that color to match its printed equivalent more closely. This form of correction affects *only* the on-screen appearance of *only* process and *Pantone*



on the scanner; it appears with the top to the left in the preview window. And once you have your preview set right, you can't just select Scan from the Scan menu; you first have to click on the image window to bring it to the front. Minor details, perhaps, but annoying. I could list several more, but I'll spare you. You get good scans, but you have to fight the software a little to do it.

At \$11,090 for the minimum configuration (add \$3,400–\$4,400 to that if you get the TIB Buffer Box), the Truvel scanner is not for the budget-conscious. But if you're doing intensive flat (or 3-D) color production work and can afford it — and if Truvel has addressed the quality-control issue — you will find this product a valuable addition to your desktop.

#### FIXED ON THE SLIDING SCALE

We also looked at two 35mm slide scanners, the Scanmaster 35-I from Howtek and the BarneyScan. Unlike flatbeds, which typically have variable resolution, slide scanners are usually fixed-resolution devices. The Scanmaster 35 scans 2,000-x-2,000 pixels, the BarneyScan 1,024-x-1,520.

**The Scanmaster 35:** The Scanmaster 35 slide scanner (at \$8,195 with GPIB NuBus card and software) bears a striking resemblance to its Scanmaster flatbed cousin, not in appearance, but in setup and use. It, too, is a GPIB device, and you can run both the Scanmaster and the Scanmaster 35 from a single NuBus card (GPIB has some advantages). Furthermore, it uses the same software, MacScan-It. To choose scanners from within

MacScan-It, you select Configure GPIB from the File menu and then select the device you want to use.

All the aforementioned pros and cons of MacScan-It apply equally to its use with the Scanmaster 35. Two features of the program apply to the Scanmaster 35 only, however. The first is actually a requirement: you have to calibrate the Scanmaster 35 each time you turn it on. This procedure is simple and nearly automatic — all you have to do is put a piece of black cardboard into the slide holder, click on OK, wait, take it out, click on OK, and wait again, as the instructions from the calibration dialog box tell you. The sound the scanner emits during calibration is like a foghorn at point-blank range, but it doesn't last long.

The other Scanmaster 35-specific feature is that a dozen or so additional items become active on the Original Type submenu of the Color & Contrast menu. They let you easily select preconfigured parameters for optimal results with a wide variety of slide-film types.

Results from the Scanmaster 35, were, like those of the other scanners, generally too dark. This could probably be corrected with controls within MacScan-It or with a color-correction program. But this factor, combined with MacScan-It's ease-of-use problems, makes the Scanmaster 35 a less attractive package than BarneyScan, despite the latter's higher cost.

**BarneyScan Mac:** Although a spate of new slide scanners is about to hit the market (see sidebar, "Upcoming Products"), the only other one shipping at press time was BarneyScan Mac from BarneyScan Corp. We found the \$9,495 BarneyScan, also designed to scan 35mm slides, to be a better choice (although it costs \$1,300 more than the Scanmaster 35), both because it does a better job of capturing an image correctly and because of the power of the software that comes with it.

Which is not to say that it has no problems. We had our share. The BarneyScan slide scanner requires a NuBus card, which means you require a Mac II of some variety. It is a propri-

colors, not spot colors. The adjustment does not affect the CMYK percentages specified in the printed image. Unfortunately for less endowed applications, the corrective display effect is available only while FreeHand is active.

#### USE YOUR WITS

- Use your production software to make a color-calibration card with swatches of 100 percent cyan, magenta, yellow, and black; 50 percent cyan, magenta, yellow, and black; plus 100 percent/100 percent and 50 percent/50 percent mixes of these colors with each other, giving you red, green, blue, and light red, green, blue, and gray. Have the card printed, using your routine process. You'll then have a color-calibration file and a printed version for comparison.

- Set your ambient lighting to that of some typical environment — the whiter the light, the better. Put your software into a mode in which you can choose and edit colors, and hold the printed card up to your monitor.

- Use the CMYK mode of your program to match on-screen colors to the color card. If your software doesn't have CMYK settings, use the RGB color model. Note the percentage tweaks you have to make to get a screen color to match the corresponding color on the card. Hopefully, the tweaking percentages will be small.

- Use the resulting numbers as an adjustment factor for any color you choose by sight alone. For example, let's say that to match your screen color with its printed counterpart you must increase the on-screen yellow by 5 percent and on-screen magenta by 3 percent. These numbers indicate that you've been looking at an overly blue screen image. One day you develop a color that looks great on-screen, but you must presume that the color will print incorrectly if you leave it as is. To correct it for printing, you must reduce its yellow component by 5 percent and its magenta component by 3 percent and use the "corrupted" version, knowing that it will print closer to what you originally saw on-screen.

With any adjustment method you use, do a mandatory set of test prints to see if your adjustment strategy worked and to help you home in on a progressively better match between screen and print.

— Salvatore Parascandolo

Special thanks, for good advice, to David Joslin of Aldus Technical Support and Andrew Bowditch, Applications Specialist for PhotoMac.





# Novell presents a net even the pickies

Macintosh owners have a reputation for being fanatical about their Macs. And rightfully so, when you consider the elegance of the Macintosh user interface.

So when Novell set out to network the Macintosh with PCs, it was with one clear caveat: preserve the Mac environment. Create network software that would feel right to the pickiest of all Macintosh users. And none are pickier than the ones at Apple.

**Full AppleTalk compatibility.** Working directly with Apple, Novell's programmers created a version of NetWare® that is compatible with the AppleTalk File Protocol (AFP). It's an

achievement hailed by Apple President and CEO John Sculley as "a very significant event for the industry." And it means that Mac users can now get all the power and flexibility of the number one local area network in the world, without sacrificing any Macintosh functionality.

AFP compatibility also means that NetWare for Macintosh will be fully compatible with future Macintosh hardware and operating system versions. So you can take advantage of new Macintosh product releases as soon as they become available.

**Freedom to choose.** NetWare for Macintosh lets you connect Macs with a



product introduction, Apple  
chairman John Sculley lauded  
Novell for its AFP support and  
contrasted Novell's product with  
serve to

*InfoWorld, June 20, 1988*

# work made to satisfy Macintosh user.

myriad of PC, minicomputer and mainframe environments, including OS/2. So you can choose the workstation environment that best suits your needs while communicating easily between dissimilar operating systems and sharing files and peripherals.

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## Still Life with Six Scans

The Macbeth ColorChecker is widely used as a standard for color correction and comparison. The "Food" is a custom still life that a commercial photo studio shot for us to challenge scanners with a wide range of colors and both shadow detail and highlight detail. All scans were done with default settings (no color correction was applied), separated with PhotoMac, and output on a Linotronic 300.

Figure 1: We produced these images using traditional photomechanical color-separation techniques. Figure 2: We used a beta version of ChromaScan (1.1b4) to produce 24-bit images that PhotoMac could separate correctly. No other software would do the trick. Although the results are dark, the contrast is reasonably good and detail is held in all but the darkest shadow areas. The deficiencies in these images could probably be corrected with color-correction software. Figure 3: Although the software for the Scanmaster and the Sharp JX-450 is different, the scanners are identical; their scans are virtually indistinguishable. Figure 4: These look almost exactly like the previous two. Close examination of the cromalins (prepress color proofs) shows them to be a little less dark, but this may not have carried over into the printed version you see here. Figure 5: While the ColorChecker appears closer to the original colors than in the scans produced by the Sharp scanner, Food appears to be enveloped in a thin veil of green smog. However, all of the original image detail is retained and, as with the Sharp scanner-generated images, the Truvel scans could probably be easily corrected. Figure 6: As you can see, hardware controls the basic quality of the images more than software. The colors in ColorChecker are quite dark, and those in Food have a gray-green cast. Detail, however, is excellent. Figure 7: BarneyScan held the ColorChecker colors better than any other scanner. The Food colors are very saturated but are also darker than those of the other scanners. Setting the scan exposure manually (we used the automatic exposure setting) or using postcapture correction could lighten the colors. Like the other scans, this one retains the detail.



Figure 1: Traditional separations.

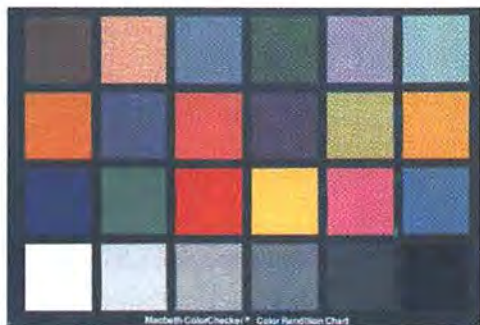


Figure 2: Sharp JX-450/ChromaScan.

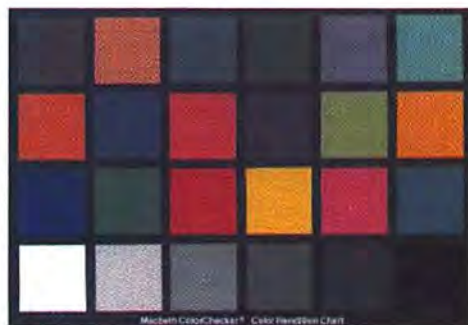


Figure 3: Howtek Scanmaster/MacScan-It.





Figure 4: New Image MacScanColor/MacScan.



Figure 5: Truvel TZ-3BWC/TruScan.



Figure 6: Howtek Scanmaster 35/MacScan-It.



Figure 7: BarneyScan/BarneyScan XP.



etary card to which you can attach only a BarneyScan. Furthermore, when you first set it up, you must go through a complete calibration procedure, which takes about 20 minutes. You save the results of this procedure in a file. Each time you start the program, this file is read into memory, but you must still perform a minicalibration, a semiautomatic procedure that takes about 3 minutes and requires you to put a couple of slides into the scanner when the software prompts you.

The calibration procedure involves BarneyScan Mac software, one of the two programs that comes with the scanner. We found this application, intended to be a basic capture program for scanning as well, to be unreliable. On several occasions, the scanner simply halted in midscan. Sometimes we could exit gracefully; other times we had to reboot the Mac. Whether because of similar reports of such problems or because BarneyScan XP, the second software package that ships with the scanner, is so powerful, the Barney folks now recommend using XP for basic scanning functions. We had no problem using the latter program.

BarneyScan XP is a powerful color-correction and paint program, similar to ImageStudio or Digital Darkroom, but in living color. XP currently works in an 8-bit mode and will work in 24-bit color when Apple releases 32-bit Color QuickDraw. It does not support the RasterOps 24-bit format.

If all you want to do is scan, just click on the Scan button. XP gives you a choice of manual or automatic exposure. Automatic works most of the time, performing a prescan of the image, on which it bases its exposures.

Within XP is a world of power for the adventurous or for demanding professionals. The program offers a full set of image-processing filters and even allows you to create your own custom filters. It also features multiple "channels" — up to 16 — for doing specialized color-correction work. You can, for example, create a channel that shows all the red in an image, reduce the amount of red wherever it is more than 50 percent saturated, and then apply your changes back to the origi-

## Upcoming Products

**A**s the sands ran out at MacUser Labs, we received word on four new scanners that will be on the market by the time you read this: the Microtek MSF-300Z flatbed and three slide scanners — the Nikon LS-3500, the Eiconix (Kodak) 1435 Slide Scanner, and Array Technologies' Slide Scanner. The latter three models are vying for the top end of the desktop-professional scanner market.

The MSF-300Z, previewed at the March Seybold show in San Francisco, is a low-cost flatbed scanner that contains many of the features of its more costly Microtek siblings. The scanner can scan at up to 300-dpi resolution, in 24-bit color, and promises to scan faster, last longer, and produce a more accurate scan than the competition in its class, according to the company. The scanning software will incorporate "virtual scanning" to enable scanning of images larger than RAM size. It's scheduled to ship in early summer with a package price of \$3,995.

The Nikon LS-3500, the first here in our lineup of three new slide scanners, was set to debut at April's National Computer Graphics Association show in Philadelphia and will no doubt provide us with the incentive to buy an erasable optical drive: the files from this scanner can be 97 megabytes! This incredible size results from a high resolution of 4,096-x-6,144 lines. The software included has prescan capabilities; performs separations on images; and can export in TIFF, TARGA, PICT, and raw RGB formats. It requires a GPIB board (which comes in the \$495 driver/software kit). The current price projection is \$9,995 for the scanner alone.

Directly competing with the Nikon product is the Eiconix 1435 Slide Scanner, priced similarly at \$10,000. You also need a GPIB board (\$595 from National Instruments) and software (\$495 for the user variety, \$1,495 for the developer variety). Eiconix's scanner boasts these features: 2,800-dpi images; export in TIFF, TARGA, and PICT formats; auto-calibration and color balance; 36-bit color information (reduced to 24-bit for Mac importing); and a signal-to-noise ratio of at least 1,000:1. The Eiconix scanner, after many delays, was set to ship in April.

On the extreme top end of the desktop market will be the Array Technologies Slide Scanner. This scanner isn't in the high-end realm just because of its price (\$20,000); it also boasts a wealth of features. Array Technologies claims that by moving a standard Hitachi color-TV-camera array sensor (256-x-256 lines) in subpixel increments and then subtracting neighbor samples, using its DSP-driven postprocessor, the scanner can produce images comparable to those of a professional-quality drum scanner. As with the Eiconix scanner, the Array Technologies scanner stores and manipulates its data in 36 bits but reduces the data set to 24 bits for Macintosh compatibility. Besides the potentially superior image quality, the Array Technologies Slide Scanner software touts numerous image-postprocessing capabilities, including an adjustable saturation index that makes it possible to saturate most colors in the scanned image while leaving selected areas untouched. The Array Technologies scanner will also be available in April.

If you are in the market for a color slide-scanning system, one of these three newcomers may be perfect for you, or if you have always wanted to put a Renoir on your desktop but don't have \$9,000 to spend, the Microtek may fit perfectly. Their manufacturer specifications look impressive, and each scanner is well worth an inquisitive gander.

— Erik Ramberg

### Array Technologies Slide Scanner

Array Technologies, Inc.  
7730 Pardee Lane  
Oakland, CA 94621  
(415) 633-3000

### Eiconix 1435 Slide Scanner

Eiconix  
23 Crosby Drive  
Bedford, MA 01730  
(617) 276-5077

### Microtek MSF-300Z

Microtek  
680 Knox St.  
Torrance, CA 90502  
(213) 321-2121

### Nikon LS-3500

Nikon, Inc.  
623 Stewart Ave.  
Garden City, NY 11530  
(516) 220-0200



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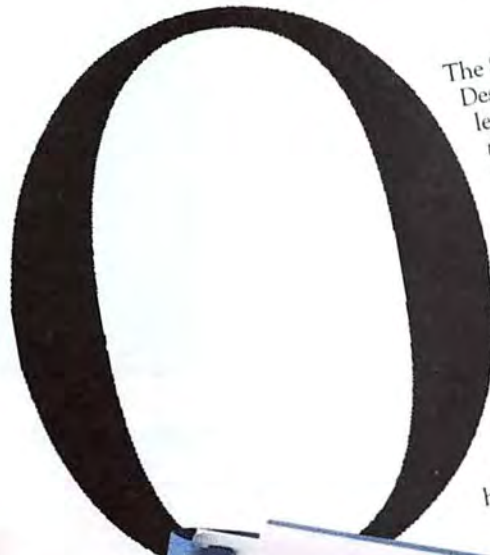
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## QUARTERLY REPORT ARTICULATE DESIGNS

• Second Quarter • 1990 •



The Second Quarter of 1990 saw Articulate Designs strengthening its position as the leader in marketing communications in the Bay Area. The most significant event was the completion of negotiations with the Oakland Rebels,<sup>(1)</sup> a new football franchise, that will have Articulate Designs create the complete team image for the club—logo, uniforms, tickets, and marketing materials. The \$5 million contract calls for consulting and design work in the mid-1990's.

The company posted profits of \$.15 per share this quarter, on \$244,568 of revenue, marking the third quarter in a row that profits have increased. The acquisition of Peach Printing in the Fourth Quarter of 1989 began to pay dividends, cutting the in-house production and printing costs in half.

## Product Comparison Chart

FEATURE			
Text Wrapping	✓	No	No
Outlining	✓	No	No
Smart Search	✓	No	No



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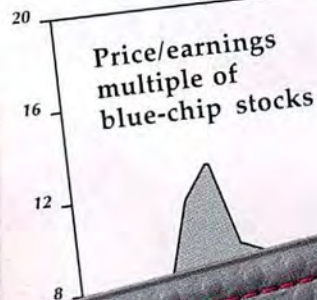
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# WITH THE NUMBERS TO

## Economic Review

**THE MEDINA GROUP**



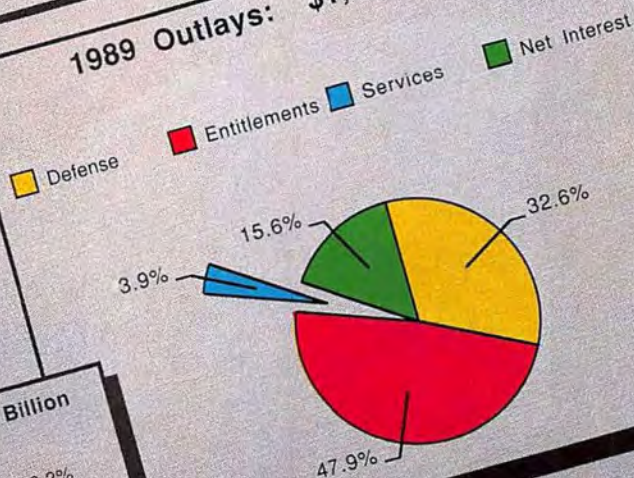
## Summary of Results

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## Close-Up on Government Spending

1989 Outlays: \$1,023 Billion



Entitlements have become increasingly burdensome as a percentage of total government outlays. As a result, funds for social services have been reduced.

1985 Outlays: \$946 Billion



ance

	Addenda	GNP
		990.5
-2.8		1057.1
-23.1		1151.2
-23.4		1285.5
-14.9		1417.0
-6.2		1523.5
-53.2		1699.6
-73.7		1935.8
53.6		2173.4

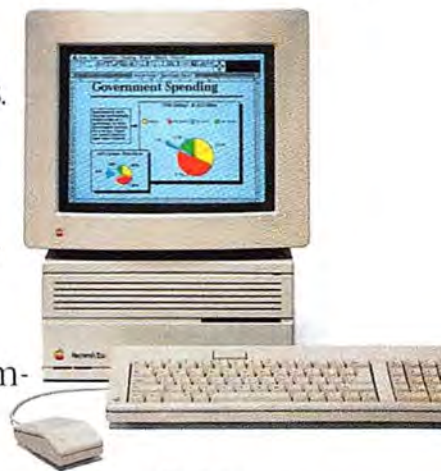


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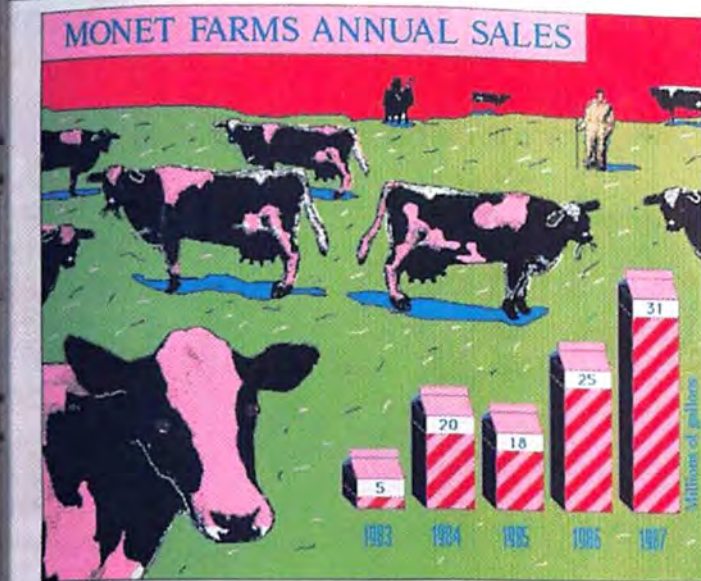


# Scanning the Color Horizon

## Color Scanners

<b>Product name</b>	<b>Sharp JX-450 Professional Color Scanner</b>	<b>Howtek Scanmaster</b>	<b>New Image MacScanColor</b>
<b>Type</b>	flatbed	flatbed	flatbed
<b>Price</b>	scanner, GPIB board, driver, \$7,545 scanner only, \$6,995	scanner, GPIB board, driver, and MacScan-It, \$8,195 scanner only, \$6,995	scanner, card, and software, \$7,590
<b>Optional hardware</b>	mirror unit, \$500		
<b>Hardware specifications</b>			
Minimum hardware configuration	Mac II, color monitor, 4 Mb RAM	Mac II, color monitor, 4 Mb RAM	Mac II, color monitor, 5 Mb RAM
Interface	GPIB (NuBus)	GPIB (NuBus)	GPIB (NuBus)
Resolution range	30-300 dpi in 1-dpi increments	20-300 dpi in 1-dpi increments	30-300 dpi
Dimensions	21.75l x 21w x 7.4h	21.5l x 21w x 5.5h	21l x 20w x 7h
Weight	55.2 lb	58 lb	44.1 lb
<b>Software specifications</b>			
Color correction	*	intermediate, pre- and postscan	minimal
Formats written		TIFF, PICT, RIFF, SIM	TIFF, PICT
Formats read		none	TIFF, PICT
RasterOps-compatible		yes	yes
32-bit Color QuickDraw-compatible		yes	yes
Software version reviewed		MacScan-It 1.1	MacScan 1.46

\* All software specifications depend on scanner software used. † This or the TIB box is required.



With the new PaintJet color printer from Hewlett-Packard.

Look at the possibilities. Instead of basic black and a few dull shades of gray, look at the zip that

color adds to graphs and charts. Overheads will command attention. And reports will have sparkling visual surprises tucked inside.

The PaintJet printer brings so





**Truvel Combination B/W 24-bit scanner (TZ-3BWC)**

overhead  
scanner, TruScan, \$9,495

SCSI interface, \$1,595<sup>†</sup>

TIB Buffer Box, 45-Mb removable, \$4,995

TIB Buffer Box, 80-Mb fixed, \$4,995

TIB Buffer Box, 200-Mb internal, \$5,995

Picture Pack, \$325

Zebra board, \$995

SE/30, color monitor, 5 Mb RAM

SCSI

75-900 dpi in 1-dpi increments

23l x 20w x 24h

38 lb

basic, prescan only

TIFF, PICT, and MacPaint for B&W image

TIFF

yes

no

TruScan 3.13

**Howtek Scanmaster 35**

slide  
scanner, GPIB board, MacScan-It, \$8,195  
scanner only, \$6,995

Mac II, color monitor, 4 Mb RAM

GPIB (NuBus)

2,000 x 2,000 lines

18.55l x 11.75w x 6.3h

25 lb

intermediate, pre- and postscan

Color TIFF, PICT, RIFF, SIM

none

yes

yes

MacScan-It 1.1

**BarneyScan (version 3)**

slide  
scanner, interface card, BarneyScan Mac,  
and BarneyScan XP, \$9,495

Mac II, color monitor, 5 Mb RAM

proprietary (NuBus)

1,520 x 1,024 lines

15.25l x 8.75w x 8h

25 lb

BarneyScan Mac-basic, XP-extensive

BarneyScan, PICT, TIFF, TIFF (IBM), Sun Artisan

BarneyScan, PICT, TIFF, TIFF (IBM), Sun Artisan

yes

yes

BarneyScan Mac v1.7, BarneyScan XP v.70

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PACKARD**



## Scanning the Color Horizon

nal image. The program also provides tools to free-rotate, skew, create "perspective" in, or arbitrarily distort a selected portion of an image.

While XP suffers somewhat from technospeak, it is less offensive than you might expect, considering the power it brings to the desktop. Its tool palette, which follows the precedent set by programs such as PixelPaint, ImageStudio, and Digital Darkroom, will be somewhat familiar to users of those programs from the beginning. The manual also does a concise job of explaining how to use the various features of the program and how they work.

### THE LAST WORD

In my opinion, it's a little early for color scanning. The products have yet to mature: calibration standards for desktop color don't yet exist; color-image formats are still in flux; and soft-

ware developers, for the most part, are still too busy with the technical side of development to produce decent Macintosh interfaces for their products. Just as monochrome and gray-scale scanners took a year or two to catch on but are now becoming a more common part of the desktop, color scanners have yet to settle in. In the next year, Apple's release of 32-bit Color QuickDraw will open new doors to the wonderful world of color; scanner hardware and software will improve, as will color-output devices; and prices will come down.

Still, you may not want to wait. If you need color now and can afford it, here are our recommendations. For the cost-conscious, the Sharp scanner in its New Image incarnation, along with Imagenesis' ChromaScan, is probably your best buy. New Image's MacScan software leaves a lot to be desired, but it's worth the \$25 extra

you pay to buy the scanner from New Image instead of directly from Sharp. You'll do all right either way.

The Truvel scanner offers the best solution for those with more demanding requirements and the money to meet them. Its quality is somewhat better than Sharp's, and it has the advantage of being able to scan at resolutions up to 900 dpi and handle 3-D objects. If you plan to use a Truvel scanner in a production environment, the TIB Buffer Box is worth serious consideration.

For those in the market for a slide scanner, we recommend BarneyScan Mac over Howtek's Scanmaster 35 despite its higher cost. The Scanmaster has a slightly higher resolution, but its image quality is inferior. And BarneyScan XP software runs circles around MacScan-It.

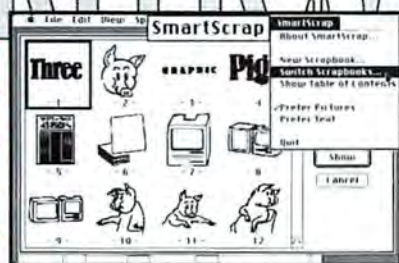
The list of color scanners in the pipeline is longer than the list of scanners

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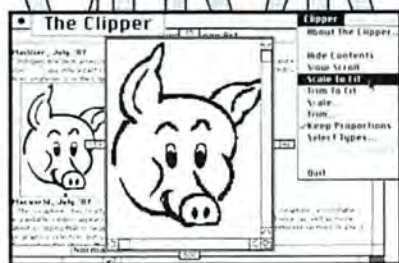
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we tested for this article. One of these newcomers could be a winner. We'll just have to wait and see. Keep a particularly sharp eye out for Microtek's \$4,000 flatbed scanner, due out in early summer. If it works, it could blow the bottom out of the color-flatbed market. ☒

HENRY BORTMAN IS A SENIOR TECHNICAL WRITER FOR MACUSER AND WILL BE GLAD WHEN HE CAN SEND ALL THESE COLOR SCANNERS BACK SO HE CAN WALK FROM THE DOOR OF HIS OFFICE TO HIS DESK UNIMPEDED.

### Kudos

Special thanks to Steve Hollinger at Avalon for providing background information on color theory; to all of the color-scanner manufacturers whose products we reviewed for letting us keep their scanners much longer than we said we would; to Stan Loll at BarneyScan for sympathy; and to Brad at Krishna Copy for working all weekend to get our Lino separations done.

## Directory

### Flatbed Scanners

**Sharp JX-450 Professional Color Scanner**  
Sharp Electronics  
Sharp Plaza  
Mahwah, NJ 07430  
(201) 529-9500

**Howtek Scanmaster**  
Howtek  
21 Park Ave.  
Hudson, NH 03051  
(603) 882-5200

**New Image MacScanColor**  
New Image Technology  
9701 Philadelphia Court  
Lanham, MD 20706  
(301) 731-2000

### Overhead Scanner

**Truvel Combination B/W 24 bit Scanner (TZ-3BWC)**  
Truvel Corp.  
8943 Fullbright Ave.  
Chatsworth, CA 91311  
(818) 407-1031

### Slide Scanners

**Howtek Scanmaster 35**  
Howtek  
21 Park Ave.  
Hudson, NH 03051  
(603) 882-5200

**BarneyScan Version 3**  
BarneyScan  
1198 10th St.  
Berkeley, CA 94710  
(415) 524-6648

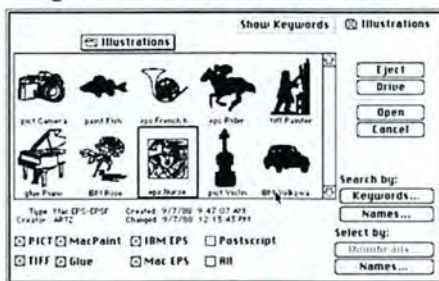
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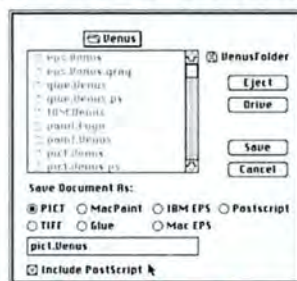
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Erfert Nielson  
MacWorld  
June '88



## DISPLAY

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Carlos Domingo Martinez  
MacUser, Sept. '88



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Lawrence Magid  
MacWEEK, Jan. '88

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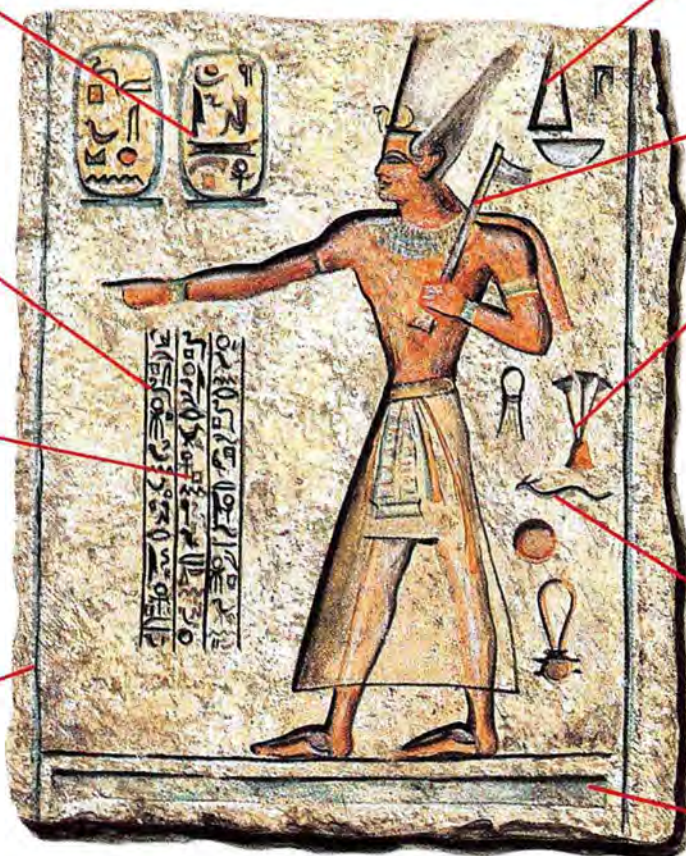
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# Apple Mac IIcx: The Modular Macintosh



**The IIcx proves that small can be beautiful *and* powerful. In fact, the IIcx is likely to become the midrange Mac II for the masses.**

**by John J. Anderson**

**A**pple faced a crisis in the product family. Entry-level customers could choose a Macintosh Plus and enter the game at the bottom rung. Those who needed more capability could opt for the Macintosh SE, with its modest expandability and greater speed. And the Macintosh II was created for those who needed even more — color,

68020 speed, math coprocessor, NuBus capability. Late last year, Apple upped the ante once again with the introduction of the souped-up Mac IIx, which sported a faster 68030 CPU (15.7 megahertz).

But there remained a noticeable gap, in price as well as performance, between the SE line and the Mac II line. To round out the product family, that gap somehow had to be filled.



Apple faced two parallel strategies: it could either push up on the SE or down on the Mac II.

It chose to do both.

First came the Macintosh SE/30, with the performance of a IIx inside the familiar footprint of an SE. The incompatibility of its restyled expansion slot notwithstanding, the SE/30 reaffirmed Apple's commitment to the lovable, luggable Mac case, first available in beige from Steve Jobs in 1984.

Now we're introduced to the Macintosh IIcx. To call its creation a pushing down on the Mac II might be stretching things a bit. True enough, it sports a mere three NuBus slots, rather than six. But in almost every other area, it looks the equal of the top-of-the-line Mac IIx.

### A New Look

And what a look. The IIcx is just under a foot wide, just over a foot deep, and 5.5 inches high (assuming you orient it horizontally). It has been designed with removable rubber feet that can be conveniently positioned for horizontal or vertical orientation. The machine is sleek, light (14 pounds), and entirely modular. It without question points to the future of personal-computer design. And we can't help but wonder whether its appearance (especially in vertical orientation) was entirely uninfluenced by Mr. Jobs' latest machinations at NeXT.

Inside this pretty box, we find a 15.7-megahertz 68030 microprocessor, with its built-in Paged Memory Management Unit (PMMU). A PMMU is required to support A/UX, and on the original Mac II, it assumed the form of an optional chip. The upcoming System 7.0, to be unveiled later this year, also requires PMMU capability to enable true multitasking. Data and instruction caches on the 32-bit CPU can also help speed its

performance, and, like the '020, the Motorola 68030 is capable of addressing up to a whopping 4 gigabytes of RAM. The IIcx also features a 68882 floating-point coprocessor and ships with 1 megabyte of SIMM RAM, optionally expandable to 8 megabytes on the motherboard.

The unit sports 256K of ROM soldered to the board, as well as an empty ROM SIMM socket. When ROM updates become available, a jumper on the motherboard can be altered to knock out the on-board ROM and kick in new SIMM-mounted ROMs once they are in place. It was more than merely cost-efficient for Apple to solder ROMs directly to the motherboard (rather than plug them into the provided ROM SIMM socket). When a ROM upgrade comes, it will also keep down potential traffic in "black-market" ROMs.

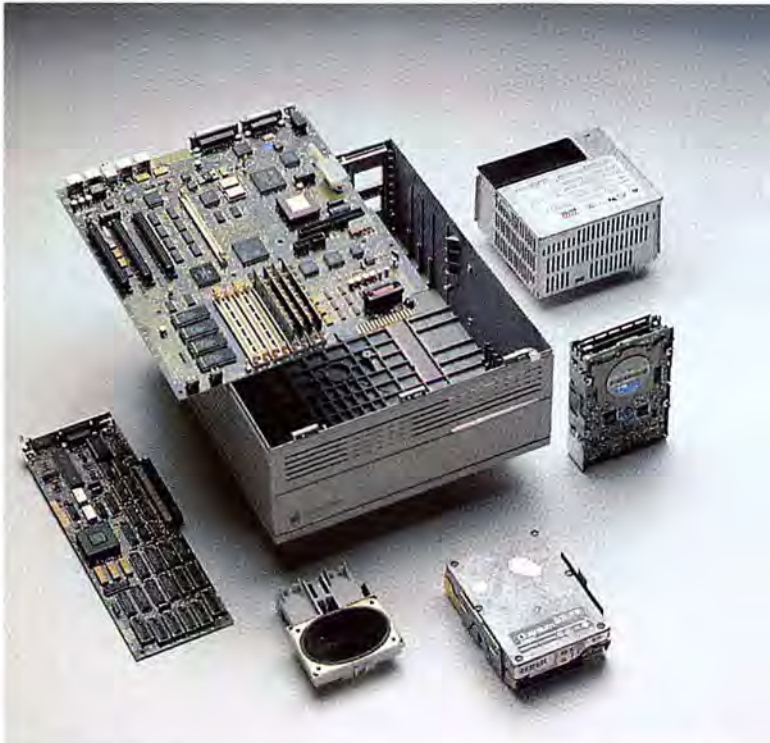
Apple's new FDHD floppy drive is standard on the Macintosh IIcx, as it is on the SE/30 and the Mac IIx. This high-capacity drive stores up to 1.4 megabytes on a single floppy disk and allows convenient data transfer



**T**o call the creation of the Mac IIcx a pushing down on the Mac II might be stretching things. It is miniaturized with three expansion slots rather than six. But in every other way, it is the equal of the top-of-the-line Mac IIx.



## The Modular Macintosh



**The beauty of the Macintosh IIcx is far more than skin deep. In fact, it's only when you take the machine apart that you develop a real appreciation for its simplicity and its functionality.**

from 3.5-inch disks in IBM PC format. Cause for rejoicing: once again it is possible to store a real-life System, Finder, and maybe even an application or two on a single high-capacity floppy disk.

The three NuBus slots of the IIcx are unbowdlerized, fully functional NuBus slots, exactly like those found on a Mac II or IIx. This is in contrast to the retooled 120-pin DIN of the SE/30, which looks a lot like a NuBus slot but in fact is nothing of the sort. Whether three NuBus slots are enough is a question you'll have to answer for yourself. At least one slot, of course, will be taken up by a video card.

The machine sports the usual set of built-in ports: two serial, two Apple Desktop Bus (ADB), one SCSI, one external floppy, and a stereo audio-output jack. The power/reset switch can now be reconfigured: it can be set to power up automatically after a power failure. This feature is of special value when you're using a IIcx as a file or E-mail server (a timely end to blown fuses in Mac II servers with their reset buttons forcibly taped

down). This new feature is indicative of the superb level of attention to user needs displayed by the machine's designers at Apple.

### Popping the Hood

And the beauty of the Macintosh IIcx is far more than skin deep. In fact, it's only when you take the machine apart that you develop a real appreciation for its simplicity and functionality. Once you've popped the lid, you need remove only one screw, and the rest of the machine can be conveniently disassembled. The 90-watt power supply nestles in a corner, using its own metal case to provide radio frequency interference (RFI) shielding around the power socket. Its integral Molex-style connector seats directly to the motherboard. The IIcx power supply is scaled down from those of its siblings to drive a maximum of three NuBus cards and a single 3.5-inch hard-disk drive. A fan built in to the power-supply box is itself modular and easily removable. We found the IIcx fan, like the SE/30's (and in stark contrast to that of the earliest SE's), extremely quiet and nondistracting.

The dual-drive chassis is plastic and seats a single internal floppy as well as an optional internal hard drive (3.5-inch variety only). The 40-mega-byte hard-drive unit inside the IIcx that we reviewed was manufactured by Sony. When we called Apple to inquire whether Sony would be named as an OEM for hard drives, Apple politely ducked the question. When asked whether 5.25-inch drives would be supported internally within the Macintosh IIcx, however, our contact came right out and said no — it's 3.5-inch drives or nothing. Among other things, this configuration undoubtedly helps in minimizing RFI. As the IIcx relies entirely on spray-coat shielding on this score, the decision is significant, at least insofar as



## Fitting the Pieces

### NUBUS CARDS

At least one slot on every IIcx will be devoted to a video card. Whether the two remaining slots are enough is a question you'll have to answer for yourself.

### FAN

The quietest yet to appear in a Macintosh, the fan connects to the power supply in an orientation designed to minimize noise.

### POWER SUPPLY

The power supply is scaled down to 90 watts to accommodate the needs of up to three NuBus cards as well as an internal hard disk. It provides its own RFI shielding for power cords.

### SPEAKER

The 3-inch oval speaker is of higher quality than its predecessors, although external output is required for high-fidelity sound. The speaker mount also serves to moor down the motherboard.

### FLOPPY DRIVE

This high-capacity drive stores up to 1.4 megabytes on a single disk and also allows convenient data transfer from the 3.5-inch IBM PC format.

### DRIVE CHASSIS

Made of plastic, the redesigned drive chassis supports 3.5-inch drives only, which narrows the field (and ups the cost) for IIcx hard drives but minimizes both RFI and power requirements.

### CASE

Aluminized spray coat minimizes RFI while holding down weight and cost. Rear venting and removable feet enable use of the Mac IIcx in vertical or horizontal orientation.

### LOGIC BOARD

The power supply of the Mac IIcx connects directly with the motherboard in a Molex-style connector. The plastic drive chassis can sit directly on the board without damage or potential short circuits. RAM upgrades are greatly simplified.





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## The Modular Macintosh



**T**he modular design of the IIcx maximizes efficiency on the assembly line. One may also safely assume that individual modules will find their way into new Macintosh models, creating improved economies of scale.

the Federal Communications Commission is concerned. Additionally, the spray-coat approach lowers the weight, design complexity, and production cost of the Mac IIcx.

The speaker within the machine is oval and slightly more robust than that of the Mac II and IIx. Although it sounds a bit better, you'll still want an external audio setup for any high-fidelity sound quality generally (or stereo output specifically). The neatest thing about the speaker mount is that, in addition to holding the speaker in place, it also moors down the motherboard. One quick twist, and the speaker is safely in hand. Now the motherboard can be lifted out, and, within a minute or so of opening the hood, you're staring into an empty box.

### Modularity at Its Best

The IIcx's modular design maximizes efficiency on the assembly line, which saves both time and money. The unit will certainly cost considerably less to manufacture than the Macintosh II does. One may also safely assume that, wherever pos-

sible, individual modules will find their way into multiple new Macintosh models, creating new levels of parts interchangeability and therefore improved economies of scale.

In addition, the modular design philosophy of the IIcx makes service a breeze. No IIcx repair need take much longer than five minutes or so. It's simply a matter of isolating and then replacing the offending module. Although the initial cost of parts may be higher, labor, which usually constitutes the bulk of any service bill, will be cut to a bare minimum. Even RAM-upgrade time is cut dramatically. On a Mac II, for example, RAM upgrade can take a while, as the first order of business is clearing a path to the motherboard. On the IIcx, it's a literal snap.

The Mac IIcx motherboard itself is a thing of beauty. At first glance, it looks like an oversized SE motherboard, although the 68882 floating-point math coprocessor, eight SIMM sockets, and triple NuBus slots disclose its lineage relatively quickly. The board schematic has been improved, and physical-trace distances have been miniaturized, improving performance yet further.

Because the IIcx ships with 1 megabyte of RAM in base configuration, many users will seek an upgrade in short order. The IIcx can be upgraded to 8 megabytes of RAM on the motherboard with 2-megabyte Memory Expansion Kits or 4-megabyte Macintosh II Memory Expansion Kits. Down the road, when denser chips become available, the IIcx will be upgradable to 32 megabytes on the logic board. Today mammoth RAM upgrades for the unit are already possible in the form of NuBus RAM cards.

### Macintosh: The New Generation

There's little doubt that this machine represents the future of the

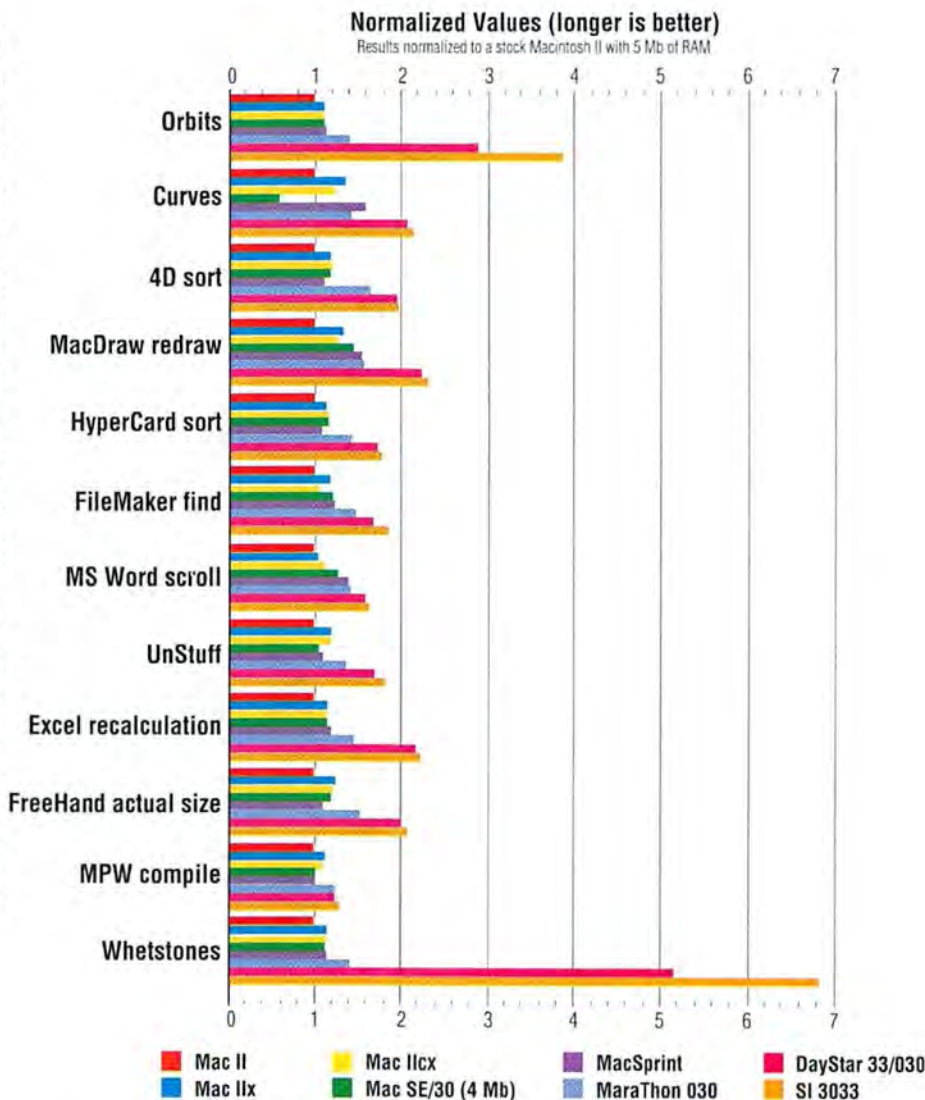


## '030 on the Fast Track

When MacUser Labs was first faced with the task of benchmarking the new Macintosh IIcx, the original plan was to compare the machine only with some of its siblings: the Mac IIx, Mac II, and Mac SE/30. The idea soon arose, however, to compare it not only with Apple CPUs but also with a select group of the best accelerator boards.

Chances are the 68020-based Macintosh II will soon be available at a lower price; third-party options can supercharge a Mac II. In some cases, third-party accelerators tested at nearly six times the speed of a Macintosh IIcx.

The accompanying chart shows the results of 13 tests run on various Macintosh computers, in addition to four accelerators that range across a broad spectrum of price. Results were normalized to the speed of the Mac II: the chart shows performance in relation to a stock Macintosh II with 4 megabytes of RAM. For details on the nature of the tests themselves, see the "Maximum G-Force" accelerator-board lab report in the February 1989 issue.



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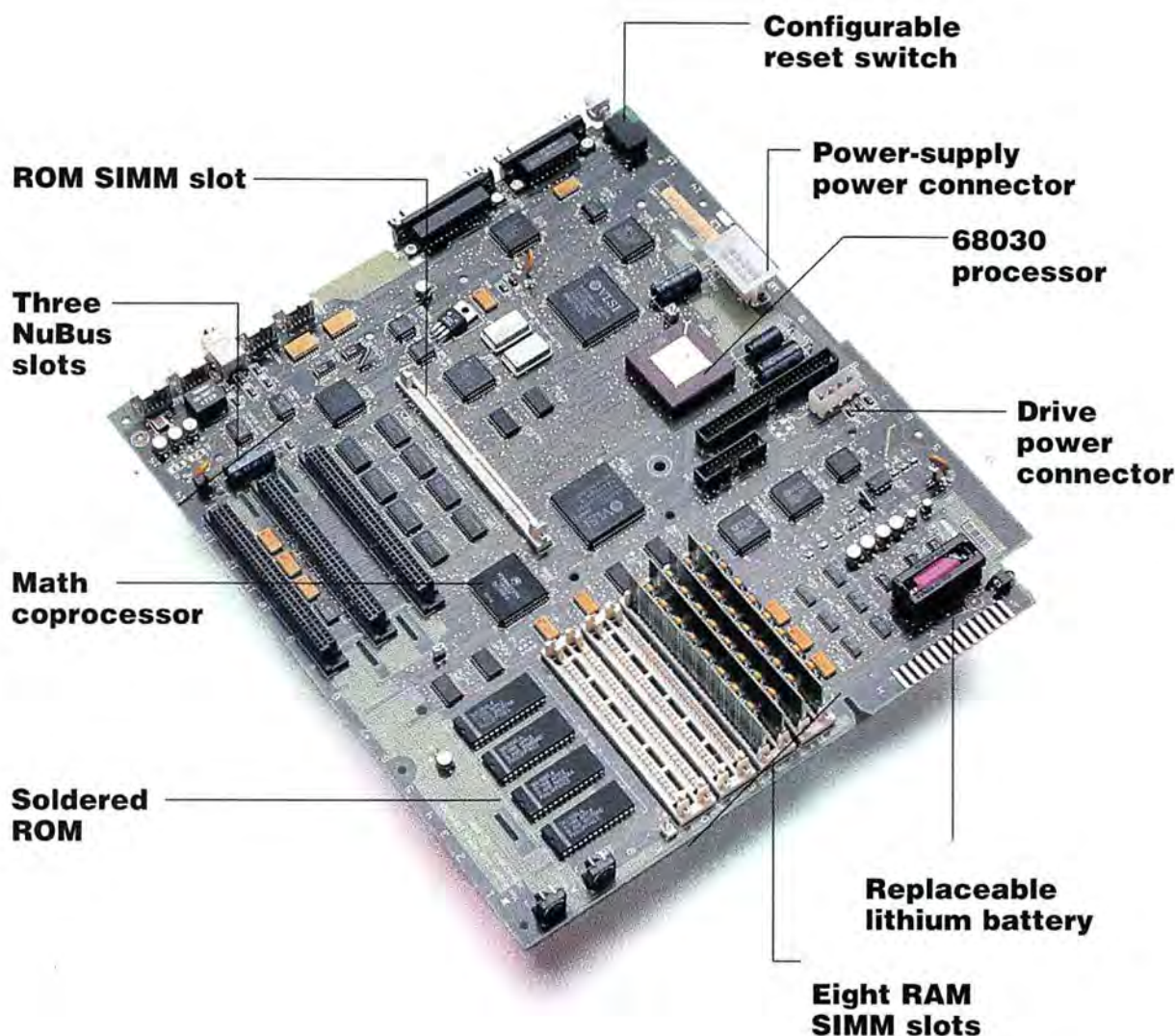
### MacSprint II

Orchid Technology  
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The clear price/performance winner and the cheapest way to speed up a Mac II. Working purely with a hardware RAM cache, it provides performance substantially better than that of a stock Mac II and occasionally better than that of a IIx.




## The Modular Macintosh



**T**he Mac IIcx motherboard is a thing of beauty. At first glance, it looks like an oversized SE motherboard.

component Mac line, alongside the SE/30, which represents the future of the self-contained transportable Mac line. The advent of the IIcx, base-sticker-priced at \$4,469, bodes rather ominously for the future of the Macintosh II. But recall that Apple itself seriously underestimated demand for the Mac II at the time of its introduction. Only time, the market, consumer reaction to three slots, and Apple's ultimate pricing strategy will tell how individual models within the product family fare.

With its superlative looks, prime

performance, and lower production costs, the Macintosh IIcx gives Apple much more strategic maneuverability at the high end of its Macintosh product family. If and when it is positioned competitively (when older models are phased out), the Macintosh IIcx should quickly ascend to flagship status of the Mac line. 

John J. Anderson is the senior editor for features at *MacUser*. He has served as editor of *Computer Shopper* magazine and also helped launch *MacWEEK*. Prior to that he was associate editor at the much-missed *Creative Computing* magazine.

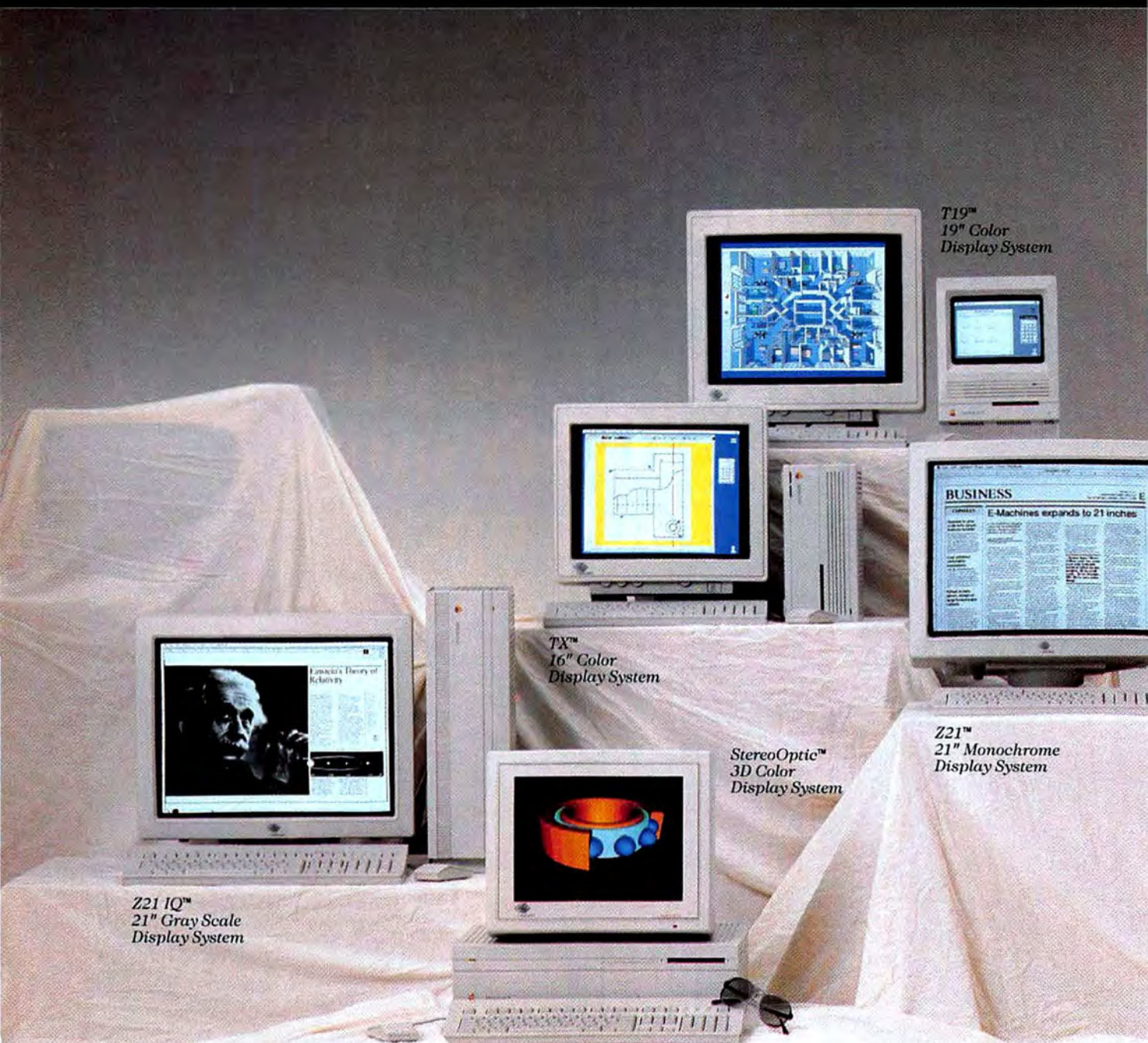


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# Wingz Weighs In

**Imagine Excel with HyperTalk as its macro language and 4th Dimension as its database components. It might look something like Wingz.**

In the arena of spreadsheet heavyweights, Microsoft Excel has long been the undisputed champion, offering strong macro capability, a wide range of spreadsheet functions, and just plain market penetration with its concomitant network of support. But for the first time, some serious challengers are in the ring. In 1988, Full Impact, the snazzy newcomer from Ashton-Tate with graphic capabilities and a more intuitive interface, won the prestigious *MacUser* Eddy Award for Best New Spreadsheet. Now here comes Wingz, from Informix Software, amid a fanfare of publicity. With an application size of almost 700K (and with a recommended minimum RAM requirement of at least 1, and preferably 2, megabytes), Wingz is definitely a heavyweight. Its many spreadsheet functions are impressive, but — more critically — Wingz has a high-level programming language called HyperScript (similar to, but not related to, HyperCard's HyperTalk language) integrated right into the spreadsheet.

With HyperScript, Wingz makes good on the Macintosh promise of user-programmable programs and sets some examples in the process.

Like Full Impact, Wingz adds strong presentation graphics to its arsenal of spreadsheet tools. But Wingz also gives you an enormous area in which to work: 32,768 rows by 32,768 columns, over a billion cells. That means there's lots of elbowroom to construct spreadsheets — although, to be fair, the total number of cells you can actually use is limited by how much RAM you have. (On an 8-megabyte Mac II, for example, you can fill only about 0.1 percent of the total cells available.)

Even so, Wingz also has a full selection of control devices that enable you to enhance the spreadsheet interface or create stand-alone applications. These aren't just the editable dialog boxes found in other spreadsheet programs but number wheels, radio buttons, sliders, pop-up menus, and check boxes (see Figure 1). By creating scripts in HyperScript, you can easily customize applications to

Development"). HyperScript's long list of functions and charting options will be welcomed by both spreadsheet novices and power users.

## Trying Your Wingz

When you launch Wingz, you're greeted by an uncluttered and functional menu bar along the top, with a Tool display along the left side of the spreadsheet (see Figure 2). You can click your way through to the four corners of the vast spreadsheet, hopping over empty areas as you go, using Wingz's handy navigation box, and you can access main functions by clicking on tool icons. Wingz has tools for creating blocks of text, buttons, and charts, as well as drawing tools for adding graphic touches to your spreadsheets. You can anchor text and graphics to any cell location by simply creating or pasting them where you want them. After entering text or data, you can format individual cells by using familiar font, size, and style options. You can also easily add color, resize columns and rows with a resizing tool, and specify numeric or date formats.

If you have a library of spreadsheets that you use, Wingz can import them if they're saved in SYLK, DIF, WKS, or text file formats. Wingz

**by David Morganstein and Jon Zilber**

a degree far beyond the level offered by the other guys' macros (see the sidebar "Under

ILLUSTRATION: RON CHAN







## Wingz Weighs In

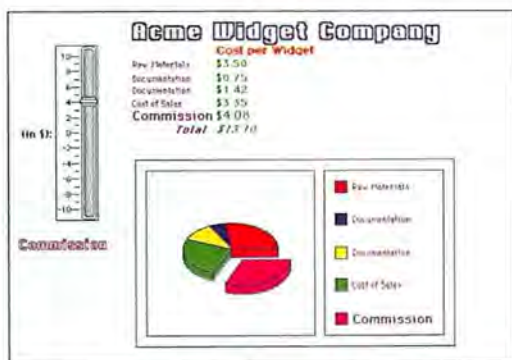
(like Full Impact) cannot read or write Excel files directly, since Microsoft's format for Excel files is still proprietary. To import Excel data, save Excel worksheets in the SYLK format, which retains nearly all the detail of your spreadsheets. (You might find some minor differences in the ways Wingz and Excel interpret some formulas, particularly database commands.) Unfortunately, Wingz can't write SYLK files; you have to save Wingz sheets in Lotus' 1-2-3 format to export them to Excel.

Wingz simplifies formula entry through a dialog box that lists functions by category (see Figure 3) rather than by one long list, as in Excel. Clicking on the radio button for a function category prompts a list of functions of that type. You scroll through the lists to access the functions. When you select a function, it's pasted into the active cell. Wingz is fully equipped with an even more comprehensive set of functions than is Excel 1.5, including everything from hyperbolics to bond computa-

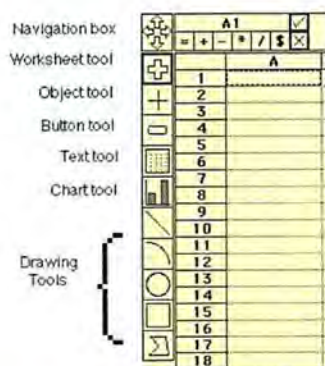
tions to matrix mathematics.

Wingz's formatting options are also on an easy-to-access menu. With this menu, you can set the attributes of cells (hide zero values, use parentheses for negatives, make cells invisible, or use commas to denote thousands), set the number of decimal places that appear, or choose a color for displaying negative values. Where Excel's technique for adding color to text is a bit obscure, Wingz takes an obvious and direct approach: the color choices are on a pull-down menu. On the other hand, Excel makes it easy to create and store new formats, something that requires scripting in Wingz.

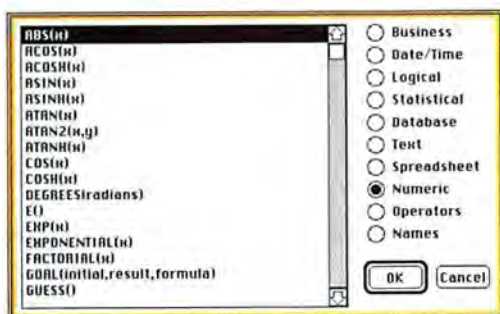
One of the few formatting features Wingz doesn't have is plane splitting, the ability to divide the screen into two independently scrollable halves. Wingz can open multiple windows that view different areas of the same spreadsheet, however, and you can also freeze headings in the first few rows or columns so that they don't scroll along with the rest of the spreadsheet.



**Figure 1:** This may not look like a spreadsheet, but Wingz may make you rethink your idea of what a spreadsheet looks like. The slider control is linked to the numerical value in the Commission cell. The pie chart also instantly reflects any change in the position of the slider.



**Figure 2:** Wingz includes a tool for navigating the spreadsheet, a tool for creating charts and text blocks directly on a data sheet, a button tool to link control devices to cells or script routines, and drawing tools for embellishing the user interface.



**Figure 3:** Wingz has a long list of built-in functions, neatly categorized and accessible through this dialog box.

## Looking Good

Exploring data graphically can be much more effective than squinting at columns and columns of numbers, and Wingz's charting options are extensive: 3-D, full-color charts for surface plots, contour plots, wire frames, and bar charts. They are easy to create and customize. You start creating a chart much as you do in Excel — by selecting a range of data to chart (including row and column headings, if desired). In Excel you copy the range to the Clipboard, select New from the File menu and Chart from the resulting dialog box, and paste in your data. In Wingz, after selecting the range, you click on the chart tool and drag a box to where you want the chart to go (you don't have to create a new document; the chart goes onto the same worksheet as the data). This



extra touch might seem like a minor convenience, like power windows and door locks in a car. But, as with those luxuries, it's easy to get spoiled, and eventually you'll wonder how you ever got along without it. As you'd expect, graphs change as soon as you change the data.

Wingz draws a bar chart by default. You can pick other chart styles from Wingz's extensive Gallery

menu. If you've ever puzzled over Excel's pie charts — which are overlaid if you have more than one series of data — you'll appreciate the way Wingz automatically produces a set of side-by-side pies.

You can also revise the title or legend text, as well as its type style or size, by changing the corresponding cells in the spreadsheet — a feature not offered in Excel. You can modify

charts to your heart's content by adding footnotes, rearranging the elements of the chart, resizing elements of the chart, changing the perspective of 3-D displays, selectively stacking certain series, or exploding pie-chart wedges, to list just a few of the options. One limitation: although you can explode pie wedges, you can't control the degree of separation between pie and wedge. Wingz also has

## Under Development

Was it Yogi Berra who once noted, "Just because you're paranoid doesn't mean they're *not* out to get you"? Well, Wingz is proof that just because a software package is prematurely announced, overly hyped, and the subject of almost unbelievable claims doesn't mean it *isn't* a groundbreaking piece of programming.

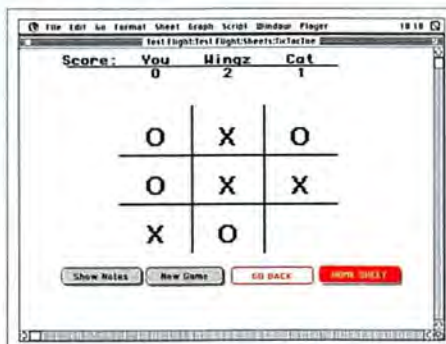
If you've seen the ads or waited in line for the Wingz tote bag at Informix's booth at a Mac show during the year-long public gestation of Wingz, you've seen the bells and whistles: a spreadsheet with an active area of more than a billion cells, full-color 3-D charts, and integration of graphics and tabular data. Speed. Cell auditing and annotation tools. A wealth of numerical, database, and text functions.

But these features are just the tip of an iceberg of capabilities, because the real power of Wingz isn't the billion cells or the glitzy graphics. In fact, the real power of Wingz isn't even the spreadsheet program. It's the Wingz scripting language, called HyperScript.

What you're really getting inside the Wingz box is an environment for developing customized applications. As a sample of the kind of application you can create, Informix has included a state-of-the-art spreadsheet. But stopping there would be like opening up HyperCard and never going beyond the sample "idea" stacks that Apple includes. Don't get me wrong: if the spreadsheet program is all you ever use, you'll get your money's worth. It's a full-bodied application, more like, say, Focal Point II than like Apple's idea stacks.

What makes HyperCard so powerful is that it's an open system — you can take the parts you like; add your own cards, stacks, or external commands; and build from

there to suit your needs. The same holds true for the HyperScript language at the heart of Wingz. You can tailor a spreadsheet to your liking or add completely new computational faculties. With HyperScript you can create applications that bear little or no resemblance to



**Figure A: Anyone for tic-tac-toe? This Wingz application seamlessly blends spreadsheet, graphic, and scripting functionality into an unbeatable (literally) and familiar user interface.**

spreadsheet programs — or to other user-developed applications (see Figure A). You can design applications for spreadsheet-phobic users in which they don't have to know they're entering numbers into cells. All their data entry and option selections can be done with sliders, menus, radio buttons, and other controls.

Although other spreadsheet programs have some macro capabilities, they're not meant to do more than create shortcuts by automating repetitive tasks. Macros are too obtuse to form the basis of real applications designed for users other than their creator. Wingz's scripting capabilities are head and shoulders above macro languages, meaning that Wingz — with HyperScript — competes not only with Excel and Full Impact, but also with dBASE, 4th Dimension, and HyperCard.

The most common paradigm for user-developed applications on the Mac has been the database program, in multiuser incarnations such as dBASE, FoxBASE+/Mac, and others. A newer genre of application-development environments comprises free-form, nonrelational, single-user database programs such as HyperCard, SuperCard, and Plus that hypercharge their development capabilities by letting you easily link small units.

Both of these approaches are based on storing data and navigating your way through previously stored data. Wingz focuses instead on manipulating and analyzing data, borrowing tools and techniques from its spreadsheet predecessors. Because of Wingz's ability to import graphics, you can enhance and simplify the spreadsheet interface. Thanks to the richness of the HyperScript language, you can easily do interactive and computational tasks in Wingz — without resorting to XCMDs or other external resources — that would be tough to do in dBASE, 4th Dimension, or HyperCard. Which is not to imply that you can't use external routines in Wingz. You can incorporate code written in C, Pascal, or any language that can be compiled and executed as an external resource file.

Even without external programming, HyperScript can directly access other Mac resources, such as sounds. That ability opens up such interesting possibilities as a spreadsheet that reads back your entries as you type them. As in Full Impact, you could even write a simple script to create animation by cycling through a series of spreadsheets that contained an appropriate sequence of graphics.

— Jon Zilber



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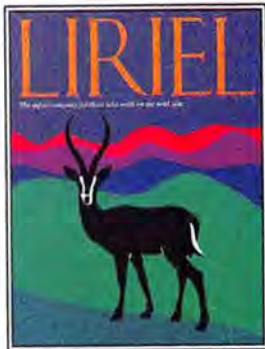
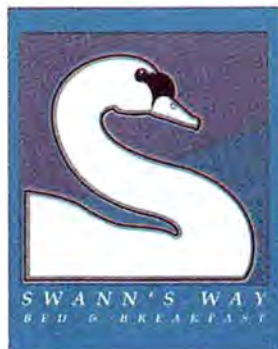
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## Wingz Weighs In

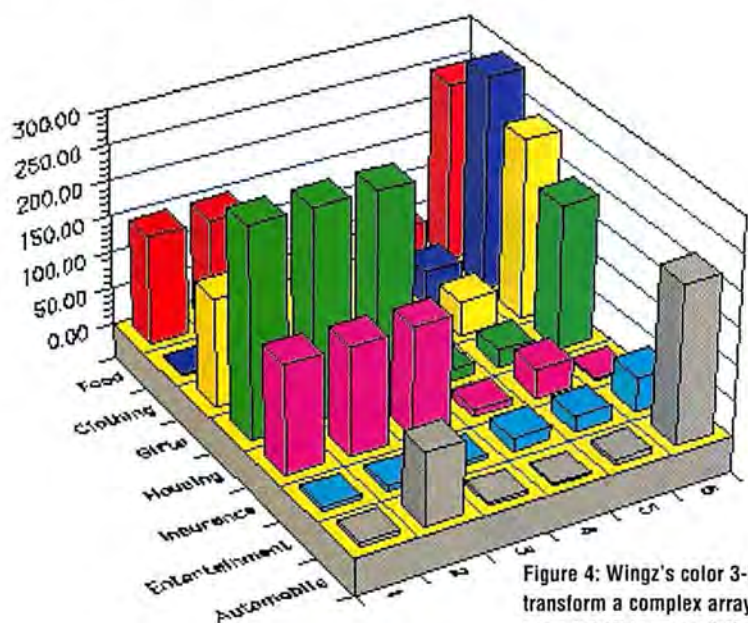


Figure 4: Wingz's color 3-D graphics can transform a complex array of data into a more intuitive presentation.

text boxes and graphic embellishments to enhance your graphs — more on those later.

The 3-D options add a new dimension to displaying data (see Figure 4). You create these charts in the same manner as you do 2-D charts, and you can adjust the elevation, rotation, and vanishing point of the chart (see Figure 5). Wingz can display the data as they are or fit them to a smooth curve. You have complete control over the colors and shading patterns, as well as the scales and the base and sides of the display. The price you pay for this flexibility and power lies in the slow refresh speed of a complex 3-D chart, which can take anywhere from several seconds to minutes, depending on its complexity. (These charting capabilities also make Wingz an excellent educational tool that can help you get an intuitive understanding of multivariable mathematical functions.)

One feature of Wingz charts can be a blessing or a curse, depending on your point of view. If the box you've dragged for a chart isn't big enough (in Wingz's calculation) to accommodate the chart style you've selected, Wingz crops the chart to fit instead of scrunching it all in. This response helps you size graphs so

that they'll be readable or choose an appropriate chart style that fits your space requirements, but it also constrains your options.

### Embellishments

Wingz provides the same kinds of graphic tools you find in drawing programs: lines, rectangles, circles, arcs, and text paragraphs, all of which you can shape, fill, or color to embellish your spreadsheets. Text fields can be edited at any time.

If you need to attach a note to your composition or place multiline headings at the tops of columns, you can create a box for text, complete with word-wrap and text-formatting options. Each spreadsheet can have headings, notes for particular cells, and footnotes on graphs. Auditing tools help you keep track of the relationships and links between cells and spreadsheets. Wingz also has a handy page-preview function that provides an on-screen WYSIWYG view of the output.

Some of Wingz's formatting features are especially useful if you're creating applications for less spreadsheet-literate users than yourself. You can hide or password-protect elements of a spreadsheet — from cells to tools to scroll bars — to prevent

users from altering fixed data and formulas or from damaging the structure of the spreadsheet. You can also encrypt entire spreadsheets to keep private data private.

### Drafting a Script

Even if you're a heavy-duty spreadsheet user, you may never have written (or recorded) a macro. That's unfortunate. Excel, Full Impact, and Wingz all use macro recorders that make it surprisingly easy to automate repetitive steps.

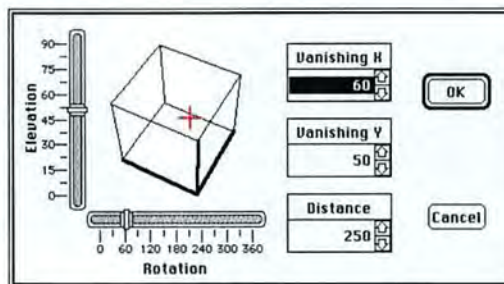
But where Excel's macro language is rather arcane, HyperScript is a high-level language complete with most common control structures, such as FOR/NEXT and WHILE loops, as well as IF/THEN/ELSE and CASE decision structures. In fact, the Wingz interface itself is built on scripts. Virtually any menu item can be translated into a HyperScript command, and you can create new functions containing local or global variables for use in your spreadsheet computations. Virtually every Macintosh event can be monitored and used to control the scripts. You can test for windows being activated (or deactivated), recalculation taking place, and mouse movements and clicks. Scripts also let you add menus to the standard Wingz menu bar to tailor the Wingz screen to your taste.

You can activate Wingz scripts in several ways. Perhaps the easiest is to place a button on your spreadsheet and attach a script to it. Click on the button, and the script plays. A script also can be associated with a spreadsheet range or a dialog box, to be activated whenever that range of the spreadsheet is selected or the appropriate selection is made in the box. You can also execute lines of code directly from a spreadsheet by typing them into the command bar and pressing Command-Enter or Command-Return.



Wingz scripting may sound like just a yuppified version of other spreadsheet macros. But the differences are more than skin-deep. Wingz's macros are much easier to create and invoke. Like Excel, Wingz has a "learn by example" mode. But although Excel's learning mode records only certain functions, Wingz's learning mode captures almost every screen action you can take, including everything from changes in chart formats to page-setup commands. Since Wingz scripts can be attached to but-

**Figure 5:**  
You can fine-tune 3-D graphics by adjusting their perspective, using the elevation, rotation, and vanishing-point controls.



tons, it's easy to create applications that someone opening up the spreadsheet for the first time can understand. And Wingz scripts can be compiled, making them faster to

execute and easier to debug. For an example of how scripting works, see the sidebar "Writing in Script."

One final note here about Wingz that makes it the only spreadsheet

## Writing in Script

The ability to add menus and menu commands is a good example of the powerful interface enhancements that are a breeze in HyperScript. For example, whenever you create a new worksheet, the new window is layered on top of any open windows. The Window menu has an Arrange Windows command that neatly tiles all open windows. A simple script (see Figure B) can combine the two functions, so the screen is automatically retiled when you add a new spreadsheet file. You can specify a Command-key option for this script.

To create this script, open a new script window. Toggle the Learn command in the Script menu on; Wingz will now record your keystrokes in the new script window. Choose New from the File menu and Arrange Windows from the Window menu. Go back to the Script menu and toggle the Learn command off. The script is finished. (As with Excel macros, you can combine learning-mode recording; manual typing; and cut, copy, and paste commands to create and fine-tune scripts quickly.) The finished script looks like this:

```
New Worksheet ""
Arrange Windows
```

We'll save this script as Autoarrange.

With the Autoarrange window active, you can select the Run command from the Script menu. When you do so, a new worksheet will appear, and all the worksheets and scripts on your screen will be retiled.

In a long script, you might want to use the Compile command (on the Script menu) before running the script. Although there's no step-by-step debugger, executing the Compile command can serve as a useful debugging tool for spotting typos (if manual typing was involved) or syntax errors.

To make this script more useful, you can turn it into a menu command by creating another script. The first step is to add a new menu called Display. (This new function could also become part of an existing menu.) The last step is to add a menu item called New

Sheet, attach the Autoarrange script to this menu item, and assign a Command-key equivalent (Command-1, in this example) to this menu item. The script that accomplishes this task looks like this:

```
add menu "Display"
add menuitem "New Sheet" key
1 command "run script ""Autoarrange"""
```

Save this script as DisplaySetup and run it. A new Display menu containing a New Sheet command should appear in the Wingz menu

bar. When you select New Sheet (or invoke it from the keyboard with Command-1), the Autoarrange script is executed: a new window appears, and the screen is retiled.

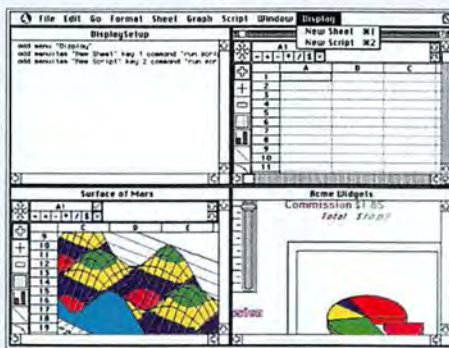
You could add a similar menu item called New Script by copying the Autoarrange script into another script (we'll call it Newscript) and changing Worksheet to Script. Next, add the following line to the script:

```
addmenuitem "New Script"
key 2
command "run script
""Newscript"""
```

Now when you run DisplaySetup, there'll be a second command, New Script (with a Command-2 keyboard shortcut). You'll never be more than a keystroke away from adding automatically arranged scripts or sheets.

These simple scripts merely hint at the power of HyperScript. Perhaps the best example of just how far you can go with HyperScript is Wingz itself: the dialog boxes and menus are actually created with the two scripts that accompany the application. If you can make sense of these uncommented scripts, you'll understand HyperScript. These scripts are also a good source for raw material: you can copy and alter bits of code from these routines to suit your needs or add your own routines, making them a part of your own customized version of Wingz.

— Jon Zilber



**Figure B:** You write scripts in separate sheets and execute them by using a button, Command-key combination, or menu item, or by clicking on a cell or other control device. This script adds menu items that automatically retille all open windows whenever you create a new script or spreadsheet.



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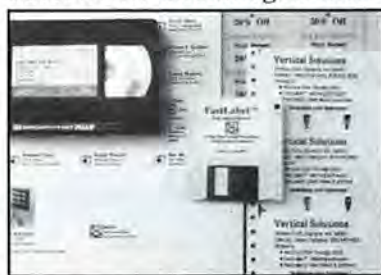
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## Wingz Weighs In

program suitable for stand-alone-application development: Informix's support for developers. Unlike Microsoft, Ashton-Tate, and other spreadsheet publishers, Informix actively supports third-party development with training seminars for developers and plans to publish a catalog of third-party applications. Informix's announcement of a full-featured University Edition of Wingz for \$89 should also help drive the development effort. Informix also plans to implement Wingz on other platforms. So far, Informix has announced plans for versions to run under UNIX (including A/UX on the Mac and an OPEN LOOK version for Sun workstations). Since Wingz itself is written in the highly portable C language, it would be surprising if an MS-DOS version were not in the works — which would certainly pique the interest of developers.

### Documentation

Wingz is packaged with an introductory video, a user guide, a reference manual, and the usual assortment of quick-start guides and cheat sheets for people who don't read manuals. Each chapter in the user guide includes some exercises tied to sample documents on disk. There's also a reasonably complete on-line help window you can access at any time.

Overall it's not a bad documentation package, but it has a few holes. The examples in the documentation — particularly regarding scripting and database commands — are rather weak. The video is a waste of time if you're familiar with spreadsheet operation; it doesn't have enough close-ups or detail to let you really see how the syntax and structure of Wingz differ from other spreadsheets.

The best way to create your first scripts is by example, and Wingz comes with two excellent pieces of

scripts to learn (or borrow) from. Called DG and WZScript, the two scripts generate the Wingz menus, dialog boxes, and functions. Unfortunately, these scripts contain no comments or guideposts that would help would-be developers untangle which pieces of code are responsible for what. It's a safe bet that a slew of books will hit the market to remedy these shortcomings in the documentation, as happened with HyperCard.

### The Downside

Informix needs to do a little work on its saved-files format, since Wingz has such a voracious appetite for hard-disk space. Its files seem to require far more space than you might expect. A file of 2,000 rows by 13 columns occupied 114K when saved by Excel in text form, but 191K when imported into Wingz and saved as text, and a whopping 428K when saved in Wingz format.

None of the Mac spreadsheet programs, Wingz included, use the kind of smart recalculation algorithms now appearing in MS-DOS programs. With this added intelligence, the entry of new data causes recalculation only for cells linked to those that are changed, substantially shortening unnecessary delays.

Wingz also has one or two glaring omissions in its feature list. For example, when you insert a cell or a range of cells, you can't specify whether the displaced cells should be shifted down or to the right — Wingz always moves them to the right. Wingz also lacks menu commands for creating cell or region borders, although you can use its graphics tools to create borders. (Menu items for borders can also be created with a script.)

Tables are an underused and very powerful feature of a database program. Wingz's tables must be recomputed manually, and the Recompute



command operates only on the last selected table, which limits you in practice to using one or two tables in a spreadsheet, unless you want to manually select and recompute them all, one at a time.

To its credit, Wingz 1.0 seems to be free of any serious bugs. At a recent Wingz developer seminar, a roomful of hackers hammering away at a prerelease version for two days never managed to crash the program and came across only a few minor bugs, all of which have been fixed in the release version.




### The Bottom Line

The big three — Excel, Full Impact, and now Wingz — are not the only spreadsheet games in town. The MacUser Labs report "Fitted Sheets,"

in our April '89 issue, includes a comparison of other options, such as the surprisingly powerful and low-cost MacCalc; Ragtime 2 and Trapeze, two packages full of page-layout and presentation features; and Works, Microsoft's integrated package with more word-processing and graphic features but less spreadsheet power than its big brother, Excel. And if you really want a flat-file database with a spreadsheet front end, you might consider ProVUE's Panorama (see the Quick Click review in this issue).

But it's Excel that Wingz is really going up against. As if that weren't already a tall enough order, the release of Wingz comes just a couple of months before the expected release of the first major upgrade of Excel.

## MacUser Labs Benchmarks

	 Excel	 Full Impact	 Wingz
Simple recalc	3.2/11.5	3.6/13.8	1.9/5.5
Minimum recalc	1.0/4.0	2.0/10.2	2.6/12.2
Complex recalc	4.4/19.9	4.6/15.4	2.0/6.1
Screen scroll	46.7/387.3	42.0/320.6	19.3/153.3
Import database	194.1	190.9	17.9
Convert bar to pie	8.8	11.9	5.6

The numbers (in seconds) above reflect test results for 200 and 1,500 rows, respectively.

The tests conceived to measure spreadsheet performance are based on typical types of spreadsheet calculations and recalculations. The Simple Recalc spreadsheet contains only simple addition, subtraction, multiplication, and division.

The Minimum Recalc test determines the time taken to recalculate the lower 50 (of 200) or 500 (of 1,500) rows, respectively, of the simple spreadsheet. Since it

is rare that an entire spreadsheet is recalculated, this test accurately gauges a spreadsheet's average performance.

The Complex spreadsheet contains calculations such as square root, modulus, and sine, as well as statistical and financial functions to reflect the performance of the slightly more esoteric operations available within a spreadsheet.

The Screen Scroll test displays the time taken to scroll continuously from the top to the bottom of the spreadsheet.

Import Database shows the time taken to import a tab-delimited database with 2,000 records and 7 fields per record.

The Convert Bar to Pie test measures the graphic speed of a spreadsheet. The less time it takes to generate a graphic from columns and rows of numbers, the more effectively graphics can be used.

The numbers shown above reflect tests done on a 5-megabyte Mac II in 256-color mode without MultiFinder.

— Stephan Somogyi

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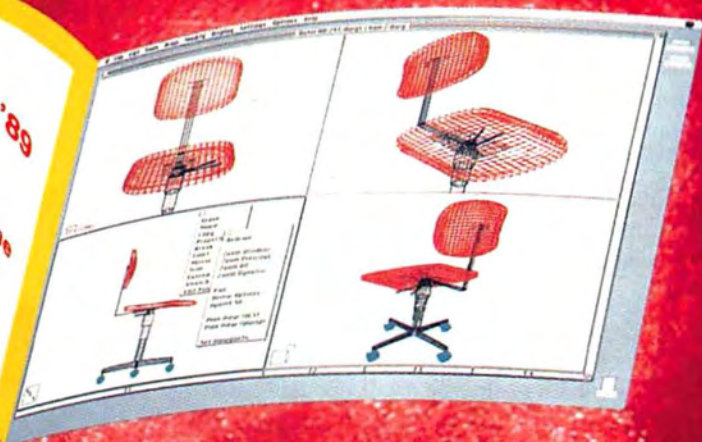
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## Wingz Weighs In

Excel 2.2, which is due out by the time you read this article, has an impressive list of new features: color, shading, and multiple fonts on a spreadsheet; integration with Microsoft Mail, SuperPaint, and Word, including "warm links" so that changes in Excel sheets will be reflected in

linked Word documents; the ability to operate with MS-DOS Excel; a status/help bar; adjustable row heights; cell auditing and notation features; macro control for all charting functions; the ability to search through or select all cells of a given type; improved memory management; and the ability

to create and address multimegabyte spreadsheets.

Microsoft's marketing monolith is already in high gear, preparing for a battle with release 3.0 of Lotus' 1-2-3 on the MS-DOS front. So you can expect a blitz of spreadsheet salvos as the battle heats up.

Wingz doesn't win on every count. But with its impressive arsenal of knockout features — a full-featured application-development environment actively supported by the publisher, speed (on big machines and in big spreadsheets), and presentation graphics (including rotatable 3-D charts and a palette of 16.7 million colors) — Wingz has an excellent shot at the title. 

David Morganstein is a statistician, a founder of the Washington Apple Pi Mac user group, and the author of the longest-running series of articles on Excel user tips. Senior Editor Jon Zilber owns a complete collection of red, yellow, and black Wingz tote bags.

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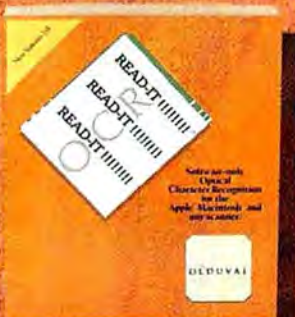
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## Wingz



Follows Mac Interface	4.5
Printed Documentation	4
On-Screen Help	4.5
Performance	5
Support	5
Consumer Value	5

**Comments:** Wingz is both a powerful spreadsheet program and an application-development environment.

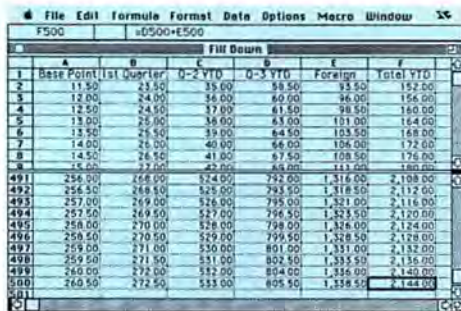
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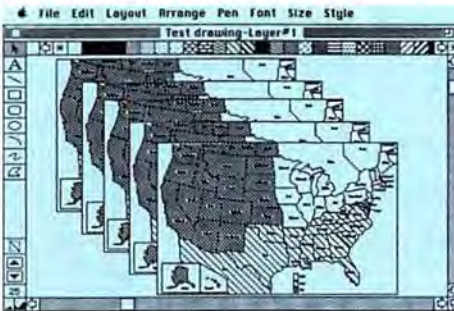


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7	14.00	26.00	40.00	66.00	38.00	172.00
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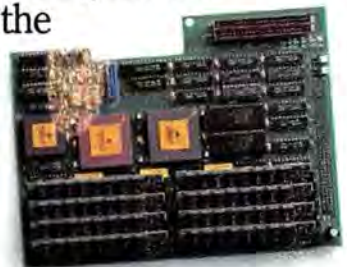
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# Personalize Your Mac

**ResEdit gives you the power to customize the Finder, to change commands in menus, and even to modify the Trash icon. But wait — there's more.**

**W**hat is ResEdit? Some applications are tough to categorize. We all know exactly what a word processor does — it manipulates words. Publishing programs perform page layout. Spreadsheets crunch numbers. But what does ResEdit do?

Like word processors or spreadsheet programs, ResEdit has a specific job — it edits the resources of other applications. With ResEdit you can improve and customize the way other applications interact with you, boosting their utility, comfort, and convenience. However, you should exercise some caution when using ResEdit — you can render an application useless. Whatever you do, work on a *copy* of the application you wish to modify.

ResEdit is not a programming language, but it does let you perform some functions that traditionally have been available only to programmers.

Without help from Res-Edit, an application's resources look like most other computer code — intimidating. They are written in hexadecimal notation (*hex* for short — the base-16 numbering system). ResEdit translates the useful information contained in these resources into dialog boxes (referred to as *templates*) that a user can understand and edit easily. In this article I will try to explain some of what it can do and why it works.

## The Background

All Macintosh applications, whether public domain, shareware, or commercially purchased, consist of two separate forks: a data fork and a resource fork. The data fork is the programmer's code that makes an application do what it is supposed to do. You never actually see it, but it is always working in the background to guide the way your application operates. The resource fork controls

**By Darryl Lewis**







what you actually see on the screen. For example, fonts, dialog boxes, menus, icons, and buttons are resources. There are many more. The data in an application calls up these resources at the proper time to interact with you by displaying them on the screen.

The Macintosh designers intended that data and resources be separate components for all applications for several reasons. The two major ones follow:

For programmers: In many cases, the data portion can be saved and only the resources changed to improve the usefulness of (or widen the market for) an application. For example, a word processor works the same way no matter what language it's processing (meaning that the data doesn't need to change), but the characters on-screen must appear differently to people typing in different languages. You can make MacWrite work in French, German, Spanish, Russian, Greek, or any other language that reads from left to right and has about the same number of characters in its alphabet by changing the font resources (the fonts themselves) appropriately — saving a lot of unnecessary reprogramming.

For users: Customizing your screen displays can make applications more useful. For example, my Finder has its icons spaced farther apart than Apple's original spacing to eliminate overlapping filenames. In addition, when I move an icon on the desktop, it automatically snaps to the place it would if I chose the Clean Up Window command on the Special menu. These changes make my Finder more comfortable for me to use. One of my friends has changed his Trash icon to The Black Hole and changed the Empty Trash command in the Special menu to Cosmic Flush. Perhaps you'd like to see the filenames in a larger font or different letters used

for the Command-key equivalents of menu items.

ResEdit gives you complete access to all resources in an application. You can change what alert boxes and dialog boxes say or resize the boxes themselves, move the buttons around, add or delete keyboard equivalents for menu items, change icons, and much more. Sometimes you might encounter an application that isn't operating properly. The problem may be with a damaged resource that can be fixed in ResEdit.

### Don't Do This at Home? Nonsense.

You don't need to be an expert to use ResEdit. Take me, for instance. I'm just a curious Mac nut who isn't afraid to make a spare copy of an application and try making a few changes that might make it better. If I fail, I've still learned something in the bargain. If I succeed, I have an application that works better for me. I suggest you follow the same procedure I do: *always work on a copy!*

One more word of advice. Don't be afraid of crashes or bombs. They are unlikely in the procedures I'll discuss here. Even if they occur, the dreaded bomb dialog box isn't half as bad as some people make it out to be — especially if you're careful to work only with copies. If any damage occurs, it is limited to the copy. I have found that damage rarely occurs. Most times the worst that happens is that a change I've made wasn't saved to the disk. So I just boot up and try again.

I am currently using ResEdit 1.2B1. Any recent version will work for what we're doing — I have also used version 1.1d3 and 1.1d4, both of which I got from my user-group library. If you don't have ResEdit, it's available from any source of public-domain and shareware software, including user-group libraries and on-line services such as CompuServe or GENie.



## A Guided Tour

Let's take a guided tour of a typical application's resources, using ResEdit. We won't make any changes this time — we'll just look around.

You're going to start by making your own startup disk. Take a blank floppy disk, create a new folder, and name it System Folder. Copy a fresh System and Finder from your Apple System Tools disk into the new System Folder. To conserve space, use Font/DA Mover (on the Utilities disk) to remove all fonts but Chicago 12, Geneva 9 and 12, and Monaco 9, and all but one small desk accessory such as Alarm Clock. (You must leave one desk accessory for the System file to work.) Copy ResEdit and MacWrite 4.5 onto the disk and name the disk System Copy so that your screens will look like the ones printed here. Even if you don't have the very same versions of ResEdit or MacWrite, your screens should still look pretty much the same, so you should be able to follow along.

Now you're going to turn off everything and then boot your Mac, using the new startup disk. Make sure you turn off any other hard disks connected to your Mac to protect your data. Turn on your Mac and insert the floppy. Double-click on the disk icon when it appears on the desktop, and its window will open. In the window you should see three icons: one for the System Folder, one for ResEdit, and one for MacWrite.

Double-click on the ResEdit icon. The program will open, showing a window listing all the files on your disk (see Figure 1). Notice that in addition to the System Folder, ResEdit, and MacWrite, a file called Desktop is listed. You can't see this file when looking at your desktop, but it is there. It is kept invisible to prevent you from inadvertently trashing it. The Finder stores information in this file about where things are on your desktop. Each time you insert or eject a disk or move, create, delete, copy, or change the name of a file or folder, the Finder updates the invisible Desktop file to reflect the current information.

Double-click on MacWrite. A new window opens, overlapping the first, that lists the various types of resources that make up MacWrite (see Figure 2). Notice that each type of resource is represented by a four-letter abbreviation for what that resource controls (most of the time).

Scroll down to the WIND listing. *WIND* stands for *window*, and this resource sets the default size and position on-screen for the standard windows in MacWrite: Untitled, Header, Footer, and Clipboard. Double-click on WIND. A new window opens, called WINDs from MacWrite, that lists the actual WIND resources and their ID numbers (see Figure 3).

Double-click on WIND ID = 304, and a new window opens that looks like a miniature Mac screen, with the Clipboard window displayed. This is the specific resource that controls the default size of the Clipboard window that opens when you select the Show Clipboard menu item in MacWrite. You can click anywhere on the miniature Clipboard window and drag it to reposition it on the screen. You can also click in the extreme lower right corner and drag to resize it. There is a WIND menu in the menu bar. If you select the only choice in this menu, Display as Text, you get a new window that permits you to change the name displayed in the title bar of the window. The numbers in the boxes represent the coordinates on-screen (in screen dots or pixels) of the four corners of the window, counting from the upper-left corner. If you resize the window by



Figure 1: ResEdit's opening window.

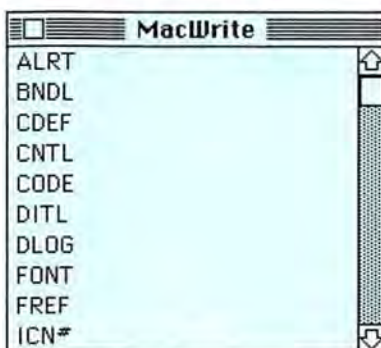


Figure 2: MacWrite's resource window.



Figure 3: The WIND resources with their ID numbers.



## A Guided Tour

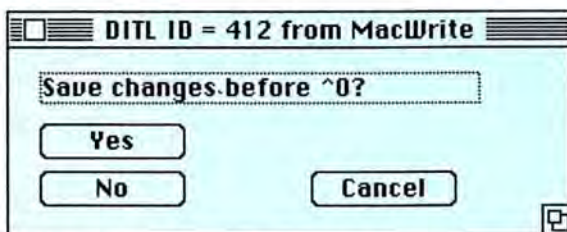


Figure 4: The *Save changes before...?* DITL resource.

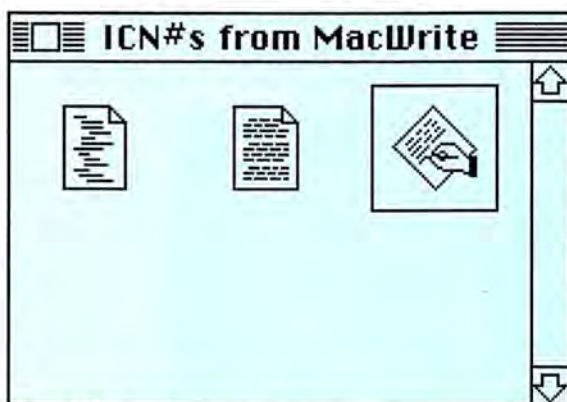


Figure 5: The ICN# resource window.

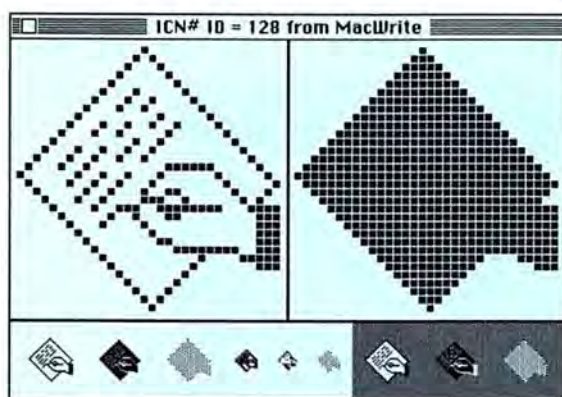


Figure 6: The editing window for MacWrite's icon ID = 128.

clicking on and dragging the lower-right corner, these numbers change automatically. You can also change the window size by changing the numbers in these boxes directly.

Close both WIND windows by clicking in their close boxes and go back to the MacWrite window.

Scroll through the various resource types and note the ALERT, DLOG, and DITL listings. ALERT and DLOG resources control the size and position of complete alert boxes and dialog boxes but not the text or buttons displayed in them. DITL stands for *Dialog Item List*. This is where the words, buttons, and any icons included in alert boxes and dialog boxes are found. Each ALERT or DLOG resource has an associated DITL resource, and the associated resources usually have the same ID number.

There is a difference between alert boxes and dialog boxes. An alert box appears when the Mac needs to communicate something to you. Sometimes the Mac wants to be certain you really want to do something that can't be undone. In other cases it may tell you it can't do what you've just requested. Alert boxes generally contain buttons for OK and Cancel. Dialog boxes ask you to choose among several possibilities. In addition to the OK and Cancel buttons, there are often buttons for the various choices.

Double-click on the ALERT listing, and a new window opens, listing MacWrite's ALERT resources. Double-click on ALERT ID = 317, and a new window opens showing the miniature Mac screen with the *Save changes before...?* alert box (see Figure 4). Editing ALERT and DLOG resources is similar to editing WIND resources. You can click on the box and drag it around the screen or resize it.

There are two ways to make changes in the wording or buttons of this ALERT. The hard way is to click anywhere in the MacWrite window to bring it forward, then double-click on the DITL resource listing to display a window with all the DITL resources, and then double-click on DITL ID = 317 to open a window displaying the text and buttons for ALERT ID = 317. ResEdit provides a shortcut, however: double-click on the miniature ALERT box. (This technique works for DLOG resources as well.) The associated DITL resource immediately opens a new window. Even the menu (not pictured) changes to DITL. Here you can click and drag the text or buttons around the box to change their position. Each can be resized from its lower-right corner. Double-clicking on the buttons or text opens new windows in which you can edit their function or what they say. Now close these windows and go back to the MacWrite window.

Scroll to the ICN# listing. This resource contains the icons for MacWrite and its documents. Double-click on the listing, and a window opens that contains three icons (see Figure 5). The icon on the right side is for MacWrite itself. The middle one is for a standard MacWrite document, and the left icon is for a MacWrite document that has been saved as text without any font or formatting information. Since these icons are pictures rather than text, clicking on one selects it by placing a box around it rather than by reversing its color on-screen. In addition, no ID numbers appear in this window. To find out the ID number of the MacWrite icon, click on it once and then choose Get Info on the File menu. A dialog box will give you information about the type of resource and its ID number.

Double-click on the MacWrite icon, and a new window opens showing two panels (see Figure 6). The upper panel is divided into two sections. The left side shows MacWrite's icon in MacPaint-style



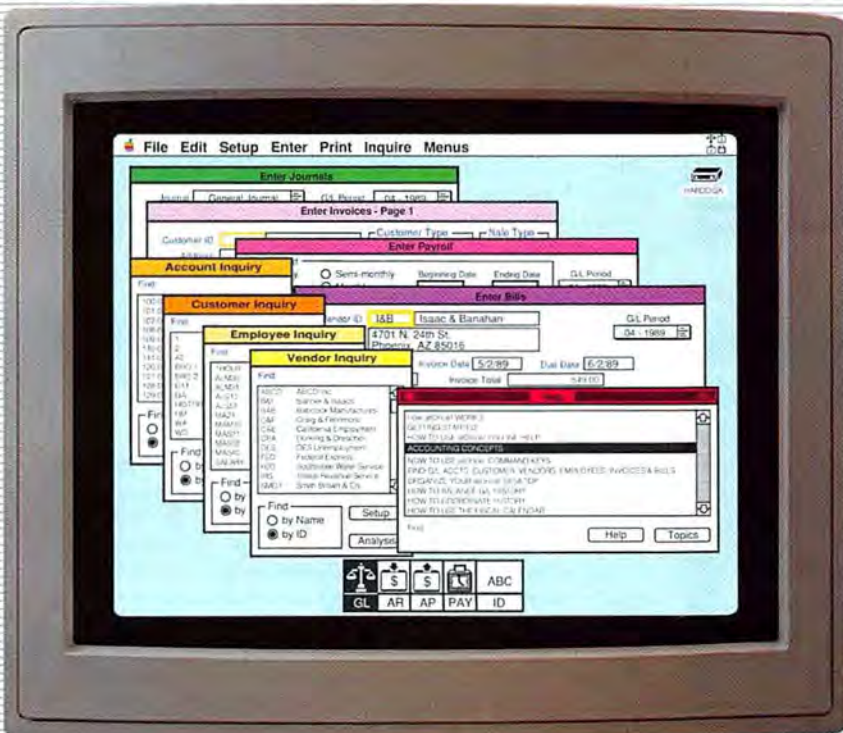
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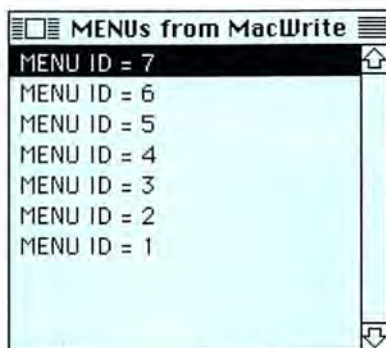


Figure 7: The MENU resources with their ID numbers.

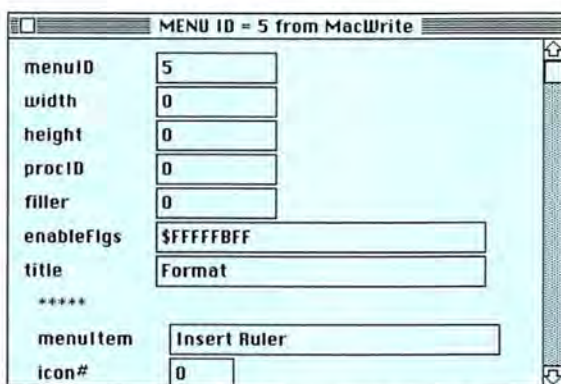


Figure 8: The window for editing MacWrite's Format menu.

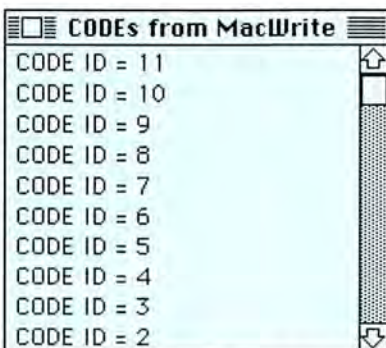


Figure 9: The CODE resources and their ID numbers.

FatBits. The right side shows the icon's "mask," which is a completely grayed-out version of the same icon. The bottom panel shows the icon unselected and selected, its mask, then the same three views of small icons, and then the standard-size icons on a gray background. The background corresponds to the pattern you have chosen for your desktop in the Control Panel. If you choose a different desktop pattern, the three icon views on the right will appear on your current pattern.

You can edit the icon, using the same procedures you would for FatBits in MacPaint. If you click on a black pixel, it will turn white, and vice versa. The only difference is that the cursor looks like a pointer rather than a pencil. As you make a change, its effect appears immediately in the bottom panel.

This same FatBits style of editing applies to all graphic resources: CURS (cursor), SICN (small icon), ICON (icons), FONT (yes, you can customize your fonts), and PAT and PAT# (both dealing with patterns). Incidentally, you might have noticed that PAT has only three letters. All resources have four, but there's no rule that prevents one from being a space.

It's time once again to return to the MacWrite window by closing these windows.

Double-click on the MENU listing. This resource contains MacWrite's menus (see Figure 7). Each of these listings represents one menu, including the Apple, or desk-accessory, menu.

Double-click on MENU ID = 5, and a new window opens in which you can edit MacWrite's Format menu (see Figure 8). The boxed numbers at the top of this window identify the menu and tell the Mac when to make it active and when to gray it out. Scroll down to the first menu entry, Insert Ruler. By editing the words in this box, you can change what the menu says. In addition, the *key equiv* box, which contains the letter R, is where you can change the Command-key equivalent for this menu item. It is not necessary to type the Command symbol — just the letter. An important rule is not to use the same letter more than once per application. Otherwise, only one of the functions to which you assign the letter will work.

If you try to locate a menu item and can't find it in the MENU resource, you should know that some software companies hide them elsewhere. Microsoft, for example, often places menus in STR resources. STR and STR# resources are strings of characters — words and phrases — that the Mac displays for you at the appropriate time, either in menus or dialog boxes. If you locate some menu listings in STR resources, you can recognize Command-key equivalents because they are separated from their menu listing by a slash. You can also add keyboard equivalents to these menu items by inserting the cursor right after the listing and typing a slash and the letter you wish to use (for example: Select All/A). Once again, close the MENU windows and return to MacWrite's window.

Another word of caution — ResEdit is still in the developmental stage. Not every resource has a template yet, but each revision of ResEdit includes a few more. So far, all the resources we have looked at have had templates. It is important that you recognize resources that have no template and avoid them, since changing them can destroy an application.

Scroll to the CODE listing. This resource contains various bits of programming code for MacWrite. Double-click on the CODE listing, and a new window opens, listing the CODE resources in MacWrite



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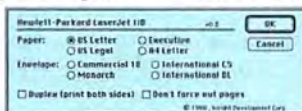
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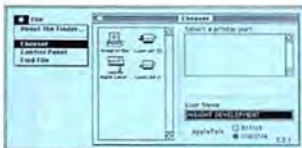
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CODE ID = 11 from MacWrite									
000000	0758	0024	226F	0008	0h0\$"o00				
000008	2078	0A78	20D9	2091	x0x 3 e				
000010	2F57	0008	2EAF	0004	/W00.000				
000018	2F7C	0000	FFFF	0004	/I 000000				
000020	6138	6100	1862	4C9A	a8a00bL™				
000028	00C0	002A	6100	0E18	0z0*a000				
000030	7E00	6000	1222	226A	~0`00""j				
000038	001A	2251	4281	556F	00"QBAUo				
000040	0008	6A04	426F	0008	00j 0B000				
000048	302F	0008	0641	000A	0/000A00				
000050	B071	1000	6CF6	3541	~aq00i 05A				
000058	001E	422F	000B	70BC	00B/00p2				
000060	6100	1826	206E	0008	a00% n00				
000068	20D2	20AA	0004	3D52	"™00=R				

Figure 10: A typical resource without a template to make it understandable. Do not edit these kinds of resources!

along with their ID numbers (see Figure 9). So far, this doesn't look different from anything we've done before. But double-click on the first listing, CODE ID = 11, and a new window opens (see Figure 10). It is a resource in its native state — no template. Every one of the numbers in this window represents a bit of information the Mac needs. In that these are gibberish to anyone except a full-fledged programmer, it is not advisable to attempt any change in a window that looks like this one. Close the window without making any changes and move on!

It's time to close all windows except for that of the disk itself and quit. If you've accidentally changed anything in one of the templates, you'll get a dialog box asking if you wish to save changes to MacWrite. For now, click on the No button.

Carefully used, ResEdit is a potent tool for improving the way your Mac works for you. Just remember — hard disks off, work only on copies, and get going!


Darryl Lewis is president of the National Macintosh Computer Society, southern Florida's Mac user group; and owner of The Help Menu, a Macintosh consulting firm in Fort Lauderdale, Fla.

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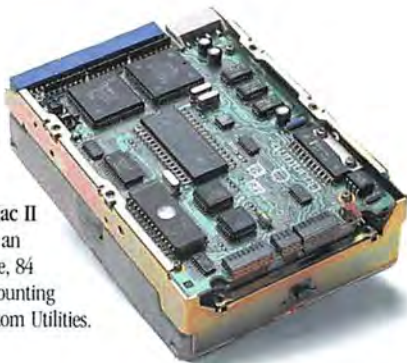
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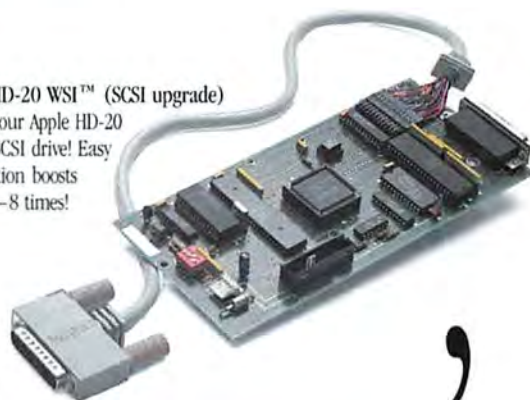
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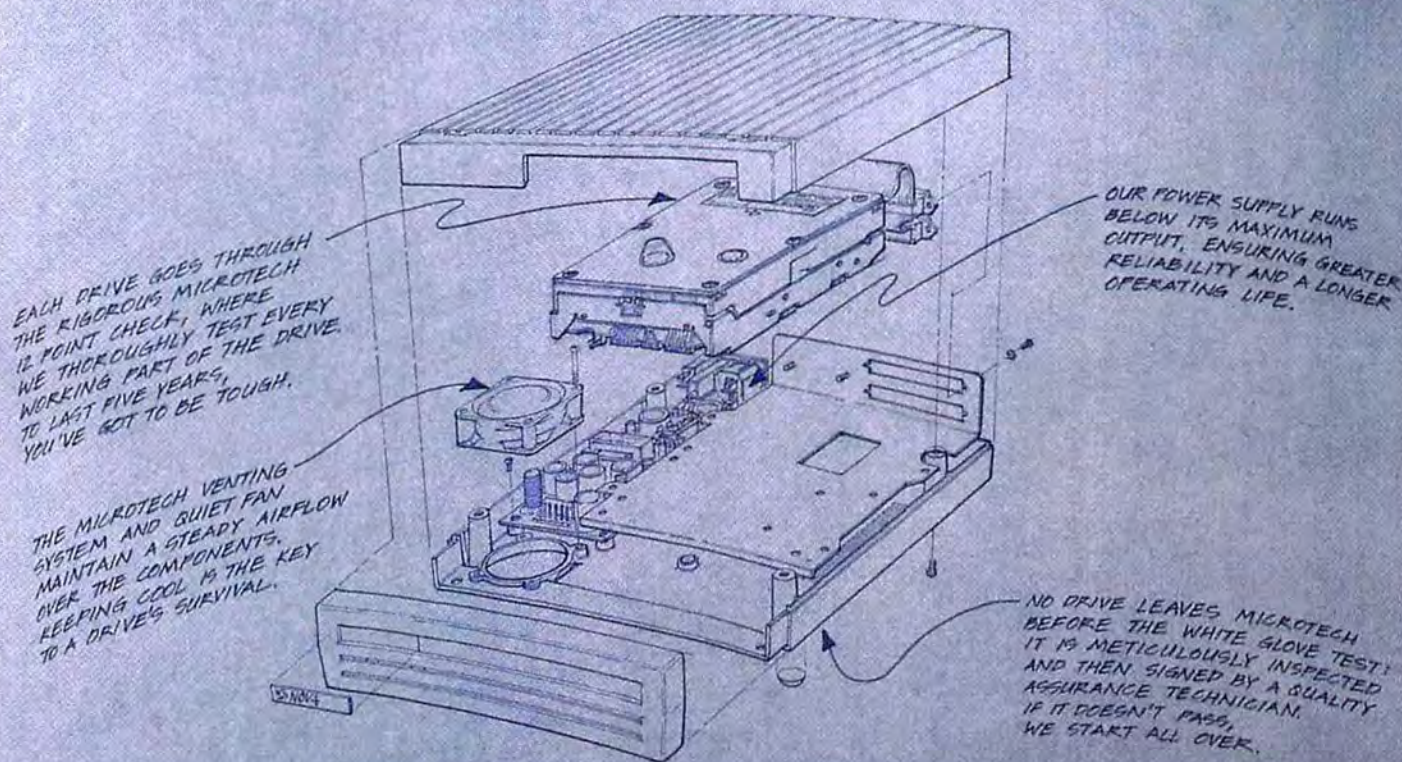
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## SPECIAL EDITION

# Customize Your Finder with ResEdit

# TIP

S H E E T

This month, Tip Sheet focuses on using ResEdit to customize the Finder. Before diving in, however, remember two rules: work only on copies of files and leave hard disks off! For more information on ResEdit, see "Personalize Your Mac" in this issue. If you've found a shortcut or two or a smarter way to get something done, share your hints by sending them to Tip Sheet. We pay at least \$25 for every hint we publish. Every month we'll select one tip as Tip of the Month, and that lucky tipster will receive \$100.

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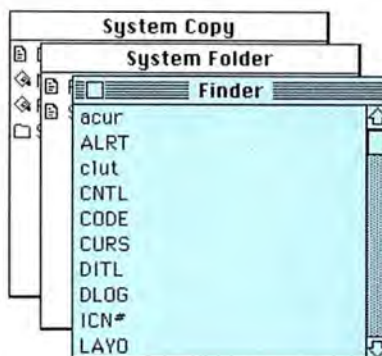
By DARRYL LEWIS

ResEdit is a powerful tool that lets you fine-tune your System, Finder, or other Mac resources. This step-by-step guide to customizing your Finder will show you how easily ResEdit can tap into a huge number of Finder options. As with all power tools, you must take special precautions before using ResEdit. Power can corrupt, and ResEdit can absolutely corrupt your disks into an unreadable mess. So *always back up your hard disks and work from expendable copies of your files* until you've completely checked out the results of your ResEditing.

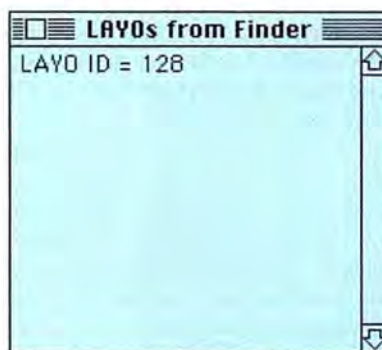
First, make a new startup disk. Copy a fresh System and Finder (from your Apple System Tools disk) into a new System Folder on a blank floppy disk. Using Font/DA Mover, remove all fonts except Chicago 12, Geneva 9 and 12, and Monaco 9, and all but one desk accessory from your System to conserve space on this disk. (You must leave at least one DA for the System to work.) Copy ResEdit onto the disk and name the disk System Copy.

Reboot, insert the System Copy disk, double-click on the disk's icon, and then double-click on the ResEdit icon. ResEdit will open, and all the files on your disk will be listed, including the Desktop file. Double-click on the System Folder listing, and a new window will open that lists what is inside — the System and Finder. Double-click on the Finder listing, and a window will open that lists all the resources that comprise the Finder (see Figure 1).

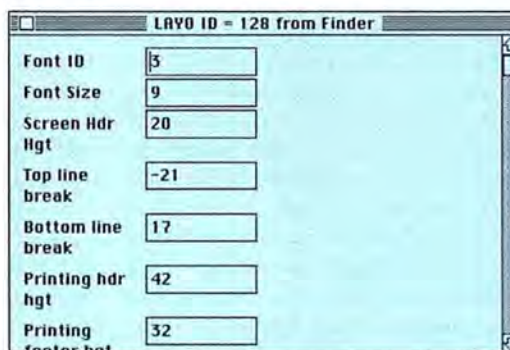
Scroll to the LAYO listing. LAYO is short for layout, and this resource type controls the screen layout of the Finder. Double-click on the word LAYO, and another window will open that contains only one resource: LAYO ID = 128 (see Figure 2). Double-click



**Figure 1**  
ResEdit provides a whole new way to change your desktop by customizing the Finder's resource list. These resources contain options for displaying alerts, dialog boxes, window layouts, and icons. Changing them is as easy as clicking and entering values.

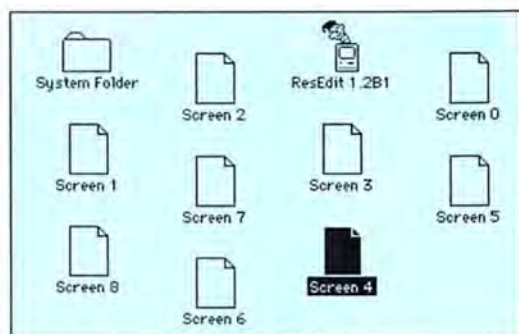


**Figure 2**  
Clicking on LAYO brings you here. This window, with its single resource, is the gateway to all the layout parameters of the Finder.



**Figure 3**  
Clicking on LAYO ID = 128 (from Figure 2) reveals the layout parameters. As you scroll through this window, you'll find many numbers and radio buttons. The numbers control such things as the default size of new windows.





**Figure 4**  
Here's a sample of what you can achieve by changing the parameter that controls how icons line up with each other. Using values other than the default of 0, you can stagger your icons like this.

on this item, and yet another window will open (see Figure 3).

You now have opened the Finder's LAYO resource. If you scroll through this window, you'll see many numbers and radio buttons. The numbers control such things as the default size of new windows, the thickness of the title bar, how far filenames appear below their icons, in what font and what size filenames are displayed, and so on. The radio buttons turn on and off such functions as the Trash warning. Each parameter can be changed to alter the appearance or performance of the Finder.

The first item in this window, Font ID, specifies the font that displays filenames on the desktop. The Macintosh refers to fonts by ID number. The default is 3, which is Geneva. Some other common Apple fonts and their ID numbers are Chicago (0), New York (2), Monaco (4), Venice (5), Times (20), Helvetica (21), and Courier (22). If you change the ID number in the box, filenames will appear in the font that corresponds to that number. The font you choose, of course, must be in your System. If it isn't, the Finder will automatically default to Geneva, and you'll see no change. To change it, use the standard editing methods: double-click in the box to select its contents, and what you type will replace what's currently there.

**Font Size** controls the font size for filenames. If you've ever wished that the words under your icons were larger, this is the place to make it happen. Experiment with different font sizes by chang-

ing the number for this parameter. Remember that the larger the font is, the more space names will require both horizontally and vertically, so you may need to move the icons farther apart to prevent overlapping. It's best to use a size that resides in your System; all other sizes will be scaled from existing ones and won't be as legible.

To see a list of the fonts available in any given System, open it using the Font/DA Mover. We removed all but Chicago 12, Geneva 9 and 12, and Monaco 9 from the System on this disk. (I

recommend sticking with Geneva because it is readable on-screen.)

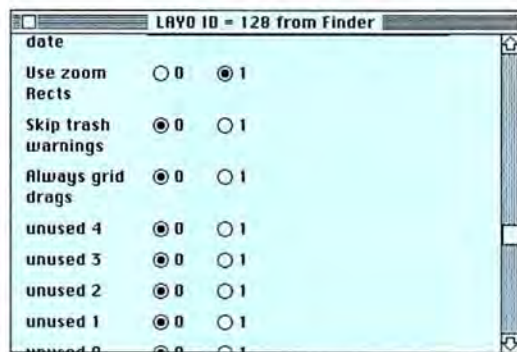
**Icon Horiz. spacing** controls the horizontal spacing between icons. The default, 64, means that icons will appear 64 pixels apart. (There are 72 pixels to an inch.) Increasing the number increases the space, which is great if your filenames tend to overlap. I generally set mine to 85. If you chose a larger font size in the previous step, then you may need even more space. Remember, though, that the farther apart the icons are, the fewer you can see on-screen at one time. Aim for a comfortable compromise.

**Icon Vert. spacing** controls the vertical spacing between icons; the default here is also 64 pixels. I've changed mine to 48, which crams a few extra rows of icons onto my screen.

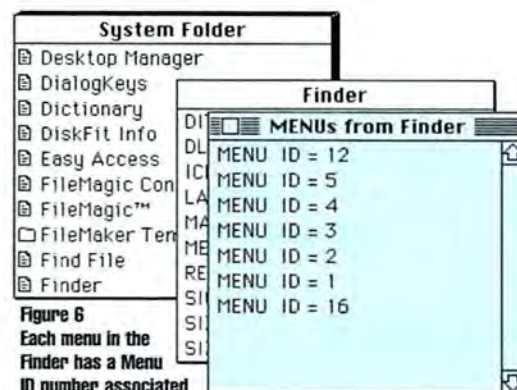
**Icon Vert. phase** controls how an icon lines up with the one next to it. The default value is 0, meaning that the bottom of all the icons in a horizontal row will be on the same line. In-

creasing the number moves every second icon above the line by that number of pixels, giving the screen a staggered appearance — another way to keep filenames from overlapping. My preference is for neatly lined up icons, so I leave this one alone. Figure 4 shows a sample of the results when *Icon Vert. phase* is 20. One caution: Don't set *Icon Vert. phase* to exactly half the value of *Icon Vert. spacing*, because doing so could result in Finder failure.

**Sm. Icon Horiz.** controls how far apart the columns of small icons are when you choose the Small Icon view in a window on the desktop. The default value is 96 pixels, but I use a setting of 150 to make room for longer filenames. **Sm. Icon Vert.** controls the vertical spacing of these list-



**Figure 5**  
Radio buttons like these let you turn Finder functions on (indicated by a 1) or off (indicated by a 0). For example, you can enable the option *Always grid drags*, which automatically cleans up a selection whenever you move an icon. Be careful, though; if you enable *Skip trash warnings*, you'll speed up the Finder, but you can run into headaches later if you eliminate this safety net and accidentally delete an important file.



**Figure 6**  
Each menu in the Finder has a Menu ID number associated with it. Clicking on any of these ID numbers takes you to an editing window where you can select that command and tailor it to your needs.





ings. The default is 20, which I find ideal.

The icon and small-icon views have separate grids. When you first change from icons to small icons, the small icons will align with the regular icon grid until you use the Clean Up command.

Default View controls which view you'll see automatically in any new window that the Finder creates. If you generally use a view other than regular icons, it pays to change the number in this item. Your viewing options are small icons (0), regular icons (1), name (2), size (3), kind (4), and last modified time and date (5). Changing this value won't change existing windows because the Finder remembers which view was assigned to a window the last time you used it by storing it in the invisible Desktop file.

Zoom rectangles are the boxes that radiate from an icon when you double-click on it. They give the impression that the icon is opening up to reveal its contents. This takes extra time and memory. If you want to make your Finder a little zippier, set the ResEdit radio button for *Use zoom Rects* to 0 to turn this feature off. I leave them on (by clicking on the 1 button) because I like the illusion they create (see Figure 5).

*Skip trash warnings* refers to the dialog box that asks whether you're sure you want to throw an application or System-related file into the Trash. It has saved many important files, but if you're infallible, you can turn it off by clicking on 0.

If you want your Finder automatically to place icons into their "cleaned-up" positions whenever you move them, set the next item, *Always grid drags*, to 1. As with the default view, this won't change the positions of icons in existing windows until you move them. With this option enabled, you'll have to use the Clean Up command only when you acquire a disk made on someone else's Mac and want the icons to fall into your customized spacing.

*Icon-text gap* controls the space between the bottom of an icon and the filename underneath, measured in pixels. If you enlarged the font size for filenames beyond 12 points, you may need to increase this value.

Now let's customize the appearance of the menus in the Finder. Close the current

window to bring up the Finder window. Click on the item called MENU. This template enables you to add or delete items from the menus in addition to playing with the names and text effects. The next window contains menu IDs 1 through 5, 12, and 16 (see Figure 6). Menu IDs 1 through 5 are the Apple, File, Edit, View, and Special menus. Menu ID 12 is for New Folder, and Menu ID 16 controls color (for those with color monitors). Click on MENU ID = 5, the Special menu (see Figure 7). As you scroll down, you'll see the commands for Clean Up Section, Erase Disk, and so on. After each menu item, there's a space for Command-key equivalents, position, and choice of text effects, such as shadowing, outlining, bold, and italic. You can edit the names of the menu items and their Command-key equivalents, and you can enable or disable menu text options (see Figure 8).

Now close all but the original disk window. When you close the Finder window, a dialog box asks whether you want to save changes to the Finder. Click on the Yes button. Your menu changes take effect. When you're down to the System Copy window, choose Quit from the File menu, and you're done.

Restart your Mac with the same disk. When you arrive at the desktop, insert a disk that has lots of files. Open it and select the Clean Up command from the Special menu. All icons in the active window should jump to their newly set spacing. If this procedure works as expected, replace the Finder on your working disk by copying the customized one into its System folder. If something doesn't look right, carefully repeat the process or delete the contents of the System Copy disk and start from scratch.

Once you've mastered

the basics of ResEdit, you're ready to explore its mysteries further. But remember: always work with expendable backup files, and don't subject your hard disk to experiments until you've checked out your handiwork.

You can also accomplish many of these tasks using a freeware program called Layout! from Leptonic Systems Design. Layout! simplifies Finder customization, letting you change the size and font of text items on the desktop, adjust the positioning of icons, and change the default view and position of new windows. For information, contact Leptonic Systems through CompuServe (74206.1406), BIX ("lepton"), GENIE (M. OCONNOR), or Delphi (LEPTRONICSYS).



Figure 7

After clicking on a specific Menu ID number, you'll find an editing window in which you can change the height and width of each menu, the names and Command-key equivalents for menu items, and other options.



Figure 8

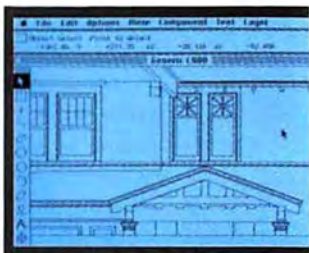
The MENU ID editing window has radio buttons that enable and disable menu text effects. You can even turn the menu selection itself on and off, but before you disable it, be sure you really won't need a selection.



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# Gray Expectations





## A new generation of desktop scanners sports lower prices, higher resolutions, and amazing grays.

**W**hen the Macintosh burst onto the computer scene in 1984, it was hailed as the electronic equivalent of a graphics studio. As long as you created everything from scratch, using the fonts and drawing and painting tools on the computer, it was a brilliant conceit. But if your artistic talents were limited to scratching out stick figures, or if you wanted to use nonelectronic artwork, your options were few. True, desktop scanners also made their debut in 1984, but poor image quality and high prices limited their appeal. For the average user, there was no satisfactory way to bring high-quality drawings, photos, or text from the outside world to the digital desktop.

Fast-forward to 1989. MacUser Labs receives nearly a dozen of the trendiest peripherals in Macdom: gray-scale scanners. Recent advancements in scanning technology have spawned a new generation of desktop scanners with higher resolutions, expanded gray-scale capabilities, and lower prices. Today, a scanner that captures 256 levels of gray costs around \$2,000 — that's cheaper than a black-and-white model just two years ago.

To evaluate the current state of the gray-scale-scanner market, we put eight popular flatbed models — the Abaton Scan 300/S, AGFA Focus S800GS, Apple Scanner, Dest PC Scan 1000, Hewlett-Packard ScanJet Plus, Microtek MSF-300QS, New Image MacScanPro, and Xerox Imaging System's Datacopy

730GS — through their paces. All the scanners, except the AGFA, have resolutions of 300 dots per inch (dpi). We threw in AGFA's 400-dpi scanner to see how the higher resolution affected scanner performance.

We judged each scanner on its image sharpness, gray range, halftone quality, text-extraction capabilities, and ease of use. The results revealed each scanner's strengths and weaknesses as well as the sophistication and versatility of the software. Overall, the scanners ranged from very basic models to professional publishing machines; you should choose a scanner based on your applications and desired level of performance.

### Popularity Explosion

The recent explosion in scanner popularity was triggered by the Mac II, with its increased processing power, and the introduction of gray-scale monitors and image-editing software such as Digital Darkroom and ImageStudio, which let you see and manipulate multiple levels of gray.

The gray-scale scanner has become the darling of the desktop-publishing world. You can scan a photograph into your Mac, enhance it with image-editing software, scale it for placement in a page-layout program, and print it along with text on a camera-ready page. Although the image quality still doesn't match that of traditional halftone photographs, it's good enough for most rudimentary and midlevel publishing needs.

**By Aileen Abernathy, Peter Weiss,  
and the MacUser Labs Staff**



Desktop publishers aren't the only ones benefitting from the scanner revolution. Artists, engineers, and mapmakers, among others, can minimize manual tracing and redrawing by using a scanner to input drawings, logos, blueprints, circuit diagrams, and detailed maps.

Anyone who processes words (or numbers) for a living will enjoy the labor-saving benefits of a scanner coupled to an optical-character-recognition (OCR) program. OCR turns printed words into

electronic text files, eliminating the need for retyping. Letters, articles, books, forms, spreadsheets — all can be input rapidly to your Mac with a scanner and OCR software.



tan-  
alizing, but how much green will you have to pay for the grays? Scanner prices

### Green for Grays

The current crop of gray-scale scanners is certainly tantalizing, but how much green will you have to pay for the grays? Scanner prices

are dropping fast (both Microtek and New Image lowered their prices during the course of this report), but, in general, price and number of bits rise together.

Four-bit scanners with 16 grays retail for less than \$1,800; 6-bit models (64 grays) are about \$2,000, and New Image's 8-bit MacScanPro (256 grays) goes for \$2,495. The real bargain is Hewlett-Packard's ScanJet Plus, which has 8 bits (256 grays) but a price of only \$2,190. On the other hand, the AGFA Focus S800GS has only 6 bits, but its 400-dpi resolution demands a hefty \$5,495.

But before you plunk down \$2,000+ for the latest model, consider your total investment. A gray-scale scanner may seem expensive, but it's only the beginning. You can't see the grays without a gray-scale monitor and video card (\$1,500 to \$3,500). Gray-scale files can be several megabytes in size, so you may need to buy elusive and premium-priced RAM. And you shouldn't even consider working with gray-scale images without a sizable hard disk. If your scanner's software has limited image-editing abilities, you may need additional software, such as Silicon Beach's Digital Darkroom (\$295) or Letraset's ImageStudio (\$495).

Does the total bill make you feel faint? If so, and if your scanning demands are low-key, then you might consider some of the low-cost alternatives (see "Scanning on the Cheap" and "A Scan in the Hand" sidebars).



## Scanning on the Cheap

If your wallet says "no" to a flatbed or sheetfed scanner, consider these low-priced alternatives:

ThunderScan, from ThunderWare (Orinda, Calif.), transforms an ImageWriter I or II (but not an LQ) into a scanner by swapping a scanning head for the printer's ribbon cartridge. The head sweeps back and forth across the paper as it feeds through the printer's rollers, capturing information instead of printing it. This innovative product has shown amazing vigor against today's sophisticated competition, given that it's as much as 100 times slower than the average flatbed scanner, is difficult to focus, and can scan only what fits between the rollers. We credit its longevity to elegant simplicity, low price, and some surprisingly sophisticated features: 32 levels (5 bits) of gray, a maximum resolution of 288 dpi, and respectable scan-control and image-editing software. ThunderScan lists for \$249 but drops to \$199 at many discount outlets.

The VisionScan 300, from Mirror Technologies (Roseville, Minn.), resembles an overhead projector or enlarger. Its image sensor is mounted in a motionless head overhanging a scanning bed. Only a mirror within the head moves, reflecting an image from the bed onto the optical sensor. The 1-bit scanner takes about ten minutes to scan a letter-size page at its full 300-dpi resolution (that's four times faster than ThunderScan). It can also scan objects up to 1 inch in height. Mirror bundles VisionScan's driver software with Zedcor's DeskPaint. The VisionScan 300 retails for



VisionScan and ThunderScan (front) give reasonable image quality at bargain-basement prices.

\$795; an older 200-dpi model, the VisionScan 200, is \$595.

VisionScan and ThunderScan both transfer image data via the serial port — a boon if your Mac lacks a SCSI port but otherwise a culprit in the tedious pace of their scans.

If you have a stand-alone fax machine, you may be interested in FaxScan, from MDIdeas (Foster City, Calif.), which turns your fax machine into a scanner (line art only!). This external box connects your Mac to the fax machine. Flip a switch, and when you feed a document into your fax machine, instead of going out over the phone line, the data feeds into your Mac. You can cut and paste the resulting image via the Clipboard. At \$299.95, FaxScan gives you a fast and inexpensive scanner for your Mac, but it's compatible with Group II fax machines only.

— Peter Weiss

### Flatbed or Sheetfed?

Scanners look and act a lot like photocopyers, except that the resulting image is an electronic bit map rather than ink on a piece of paper. In *flatbed* scanners, the light source moves across the original document; *sheetfed* machines hold the light steady and feed the original through a pair of rollers.

Sheetfed scanners are cheaper, but they accept pages of only certain sizes and thicknesses. Sheetfed models can also cause image distortions because they have problems with page alignment. A sheetfed scanner is a good choice for OCR, however, since it is easily fitted with an automatic document feeder for rapidly scanning many pages.

Flatbed scanners, the kind we're re-



## How It Works

### 1 Illuminating the Original

In a flatbed scanner, the light bulb moves across a stationary original. The light shines on defectors to illuminate the original without hot spots. The distance the light travels from the original to the CCD must remain constant for the image to remain in focus. The transport mechanism of motors, pulleys, and gears is built with great precision in order to maintain a constant light-path length and avoid image distortions.

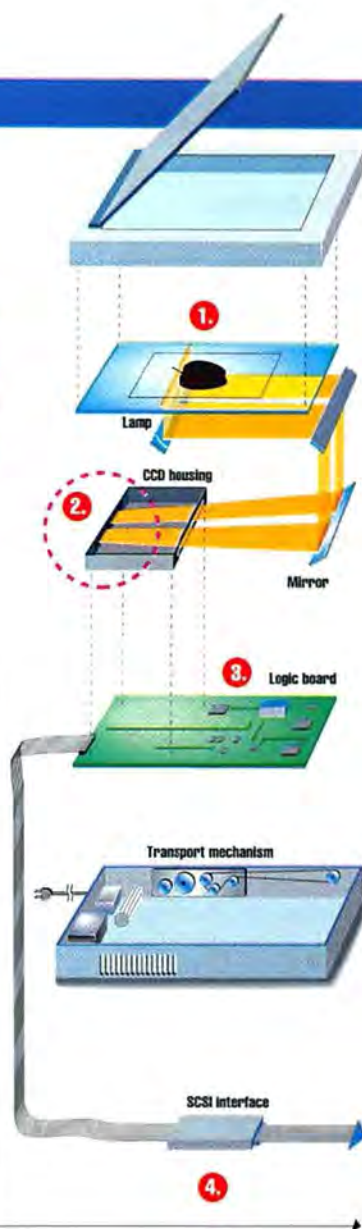
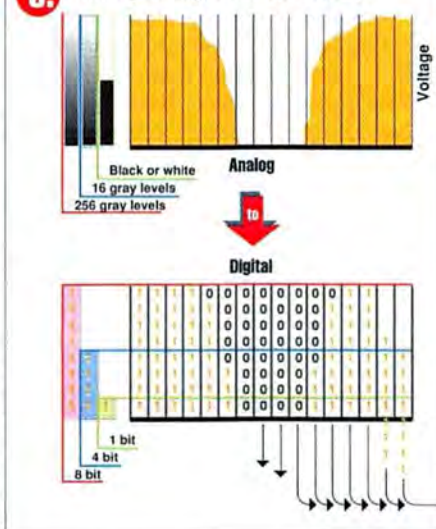
### 2 Charged coupled device



### 2 Charged Coupled Device

The CCD is a tightly packed line of 2,000 to 4,000 photoelectric cells that produce a voltage proportional to the amount of light striking them. Each cell corresponds to a single pixel on the scanned image, which is read one line at a time. In this case, the stem of the apple reflects less light than its background. Thus, less light reaches the CCD, and a lower voltage is produced. This low voltage translates to a darker gray. A new charge accumulates in the exposed cells while previous charges are collected and measured by the analog-to-digital (A-to-D) converter.

### 3 Analog-to-digital conversion



### 3 Processing the Gray Scale

The A-to-D converter measures the incoming voltage and rounds it off to the nearest digital gray-scale value. The number of bits the scanner works with determines the gradations in the gray scale (16 for 4 bits, 256 for 8 bits). For line art and halftones, the electronics convert gray-scale data to black-and-white values.

### 4 Transmitting the Data

The external SCSI box handles data transmission between the logic board and the Mac. Some scanners have a built-in SCSI interface.

viewing here, provide higher-quality images because the original doesn't move. In general, they're a better investment, in that you can precisely position artwork and scan documents of any size and thickness: photographs, books, or oversized technical drawings. Some flatbed scan-

ners, such as the Dest and Hewlett-Packard models, can also be equipped with automatic sheet feeders.

Unlike photocopiers, scanners rarely have hardware controls; everything happens through software. One exception is the Apple Scanner, which offers one-

touch scanning through its Remote Scan button. After setting the scanning parameters at your Mac, just press the button at the scanner, and the software controls the scans and saves them with sequential filenames. Remote scanning is handy if you're scanning a stack of photographs,



for example, or a set of papers to be read by an OCR program.

### Under the Hood

Scanning technology isn't sleight of hand, but it does use lights and mirrors to give itself a good image. Light bounces off the original image and is conveyed, via a series of mirrors, to the scanner's "eyes" — the *charged coupled device* (CCD), a single row of up to 4,000 tightly packed light sensors.

The CCD produces an electrical signal proportional to the amount of light striking it. A dark spot on the original reflects less light, so less light falls onto the CCD, producing a lower voltage. Likewise, a light-colored object produces a stronger voltage. The scanner's electronics convert these voltage levels into digital gray-scale values and transmit them to the computer. The accuracy of the gray-scale data can be affected by several factors, including colors, glare, dust, grease spots, and electrical noise.

The transport mechanism of motors, pulleys, and gears is precisely engineered to ensure that the mirrors and lenses remain in focus by keeping the length of the light path constant. A vibrating transport causes image distortions, just as a shaky hand blurs a photograph. The pre-

cision required of the engine is one factor that makes scanners so expensive.

Of the scanner makers whose products we tested, only AGFA and Microtek make their own engines. Three scanners have Canon engines (Hewlett-Packard codevelops its engines with Canon), and Abaton and Apple use a TEC engine. We couldn't find any problems or discernible differences in the engines.

All the scanners have flat, uniform lighting provided by either incandescent or fluorescent bulbs. The ScanJet Plus automatically compensates for changes in light intensity; the MacScanPro leaves it up to the user. Light intensity is an especially important consideration for 8-bit scanners, since any deviation can distort the gray-scale values.

### The Resolution Factor

The quality of a gray-scale image depends largely on two factors: resolution and the number of gray levels. *Resolution* is simply the number of pixels a scanner can cram into an inch. A *pixel*, or picture element, is the smallest area the scanner "sees." In scanning terminology, pixels are sometimes called *samples*, because the scanner obtains data by "sampling" the original image. To confuse matters further, manufacturers list a scanner's

resolution in dots per inch (dpi), the ubiquitous unit of measurement also used for monitors and printers.



In general, the higher the resolution, the more detail an image has — finer lines, small type, or more subtle gray transitions. Resolution is especially important for engineering and architectural drawings, maps, and other highly detailed images in which minute features are critical.

Of the scanners we tested, seven have a maximum resolution of 300 dots (or pixels) per inch; the AGFA can record up to 400 dpi. A 300-dpi resolution matches that of most laser printers; thus, the scanned and printed images will be the same size and show the same amount of detail. The added resolution of AGFA's scanner is barely noticeable on a 300-dpi printer, but it provides superior image quality for magnifying an image or sending output to a high-resolution printer.

Keep in mind that if the scanned and printed resolutions don't match, the image sizes won't be the same. For example, an image scanned at 300 dpi and printed at 600 dpi will be only one-fourth its original size. Why? Because a 600-dpi printer has twice as many dots per



## Glossary

**charged coupled device (CCD)** — A single row of up to 4,000 tightly packed photoelectric cells that serves as the scanner's "eyes." The CCD produces an electrical voltage proportional to the amount of light striking it. This voltage is converted to digital gray-scale values and transmitted to the computer.

**continuous-tone image** — An image, such as a photograph or charcoal drawing, that has an unbroken, nearly infinite range of gray levels between black and white.

**contrast** — An image's balance of gray tones. A scanner with good contrast provides an even distribution of highlights, dark shadows, and midrange tones. High-contrast images have white highlights, black shadows, and few midlevel grays. Low-contrast images look washed out because they have too many intermediate grays. When you change the contrast, every gray

in the image is affected, not just selected shades as in gamma correction.

**dithering** — A digital technique for simulating grays by turning various combinations of pixels on (black) and off (white). The more pixels (or dots) turned on in a specific area, the darker the simulated gray. This method is what 1-bit scanners, monochrome monitors, and laser printers use to represent grays.

**dots per inch (dpi)** — A generic term that describes the resolution of printers, monitors, and scanners. The ubiquitous use of *dot* can be confusing, since the smallest element depicted by a scanner or monitor is called a pixel, yet their resolution is expressed in dots per inch.

**flatbed** — A scanner in which the original is placed on a glass surface and the light source moves across it.

**gamma correction** — A technique for globally changing the displayed (or printed) brightness of one or more selected shades of gray.

For example, you can arbitrarily transform all 40-percent grays in an image to 72-percent grays. Gamma correction is useful for bringing out shadow details or toning down highlighted areas and usually involves the use of a *gray-map*, a graph that correlates stored grays with displayed grays.

**gray scale** — Just another way of saying "gray." Gray-scale images contain true grays, rather than dithered black-and-white patterns, because each pixel is a shade of gray. The number of grays a scanner (or monitor) can represent depends on the number of bits of digital data that describe each pixel. A 4-bit scanner can capture 16 grays; an 8-bit scanner can record 256 grays.

**halftoning** — A method for reproducing a continuous-tone image, using a grid of evenly spaced dots. Different gray levels are simulated by variation in the size of these dots. Halftones are necessary because a printer has



inch in both dimensions. You can't add more dots (pixels) to the scanned image, so two of its 300-dpi inches will fit into each of the printer's 600-dpi inches, both horizontally and vertically.

You get the opposite effect when displaying a scanned image on a standard 72-dpi monitor. Since the monitor can fit only one-fourth as many dots into an inch, the image will be four times its original (scanned) size. Although you won't be able to see all the image's details at 72 dpi, it will print with its full 300-dpi resolution.

### Super-Sampling

If you don't need all those extra pixels or you're short on RAM and disk space, most scanners can do *subsampling*; that is, they can scan at resolutions below their maximum setting. Only the Abaton Scan 300/S locks you into 300-dpi scans (although you can scale images, which is almost the same thing).

A few scanners also claim to do *super-sampling*. AGFA's scanner has a nominal resolution of 400 dpi, but it provides an "addressable" resolution of up to 800 dpi through *interpolation*. Its circuitry averages an image's gray-scale values and places new pixels between the existing ones. The ScanJet Plus uses a similar

## Resolution: 300 versus 400 dpi



On a low-resolution laser printer, images will look about the same whether they're scanned at 300 or 400 dpi. The superior image quality of a 400-dpi scanner (right) is readily apparent, however, when images are output on high-resolution printers such as the Linotronic 300. Note the crispness of fine details in the AGFA's output compared with the 300-dpi scan (left).

scheme to create resolutions of up to 1,500 dpi — selectable in 1-pixel increments — although its true resolution is only 300 dpi.

But don't be fooled by the hype. These scanners are *not* true high-resolution machines. Interpolated images have more

data, but they don't print with higher resolutions.

On high-resolution printers, the added data merely performs a smoothing function, providing better transitions between grays and reducing the jaggies on fine diagonal lines.

only black ink and thus can't reproduce a continuous-tone image. Because scanners and laser printers have a fixed dot size, digital halftones are created through dithering.

**interpolation** — A technique for increasing the amount of data in a scan by averaging an image's gray-scale values and placing new pixels between existing ones. It does not increase the printed resolution. Also called *super-sampling*.

**line art** — Drawings, text, and other images that are black-and-white only, with no gray tones.

**OCR** — Optical character recognition, the conversion of printed words to electronic text.

**pixel** — Picture element, the smallest area a scanner can record or a monitor can display. If just one bit of digital data describes a pixel, it can be only black or white. If a scanner records several bits of information per pixel, the pixel can appear as a shade of gray.

**preview** — A rapid, low-resolution scan that shows the entire image on-screen; useful for selecting the area for the main scan and optimizing scan settings.

**resolution** — The maximum number of pixels that a scanner can fit into an inch. The higher the resolution, the more fine details you can see in an image. Resolution is usually expressed as dots per inch (dpi).

**sample** — The smallest area a scanner can record, also called a pixel. The name comes from a scanner's method of obtaining data by "sampling" the original image; that is, it records the grayness of each sampling site.

**scan** — To digitize, or convert, a real-world image, such as a photograph or text, into bits of data on a computer. The resulting digital image is also called a scan.

**sheetfed** — A scanner with a fixed light source that feeds the original through a pair of rollers.

**TIFF** — Tag image file format, a versatile method for storing bit-mapped images in various resolutions and numbers of grays. TIFF was created specifically for the storage of gray-scale data and is considered to be the standard format for saving scanned images.

**thresholding** — A process for eliminating gray-scale information from a scan, used mainly for line art and text. All pixels darker than a certain gray level turn black, and lighter pixels become white. The threshold value is usually adjusted automatically and continuously by the scanner, depending on the range of gray values in the scanning area.

**vectorization** — A means of converting line art or halftones into a group of vectors, or objects, for editing in programs such as Illustrator.

— Aileen Abernathy



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## Shades of Gray

The number of grays a scanner can produce, its *gray scale*, depends on the amount of data it can record about each pixel. The first desktop scanners saw everything in black and white because they used only one bit of digital data to describe each pixel. They created the illusion of grays by *dithering* — turning various combinations of pixels on (black) and off (white). The greater the number

of pixels that were turned on in a particular area, the darker the simulated "gray." In the scanner world, dithered images are also called *halftones*, so named for their resemblance to traditional photographic halftones (see glossary).

Today's scanners can capture true grays because they store more information per pixel. The Apple Scanner, for example, stores 4 bits of data per pixel; thus, the pixel can be one of 16 shades of gray.

Likewise, Microtek's 6-bit scanner can display 64 grays, and New Image's 8-bit model can render images with 256 gray levels.

Gray-scale scanners still offer you the option of dithering, which can save scanning time and disk space for images that are mainly black-and-white or that will be printed at low resolutions. Unfortunately, dithering an image during the scanning process locks in its resolution and dither pattern. A 300-dpi halftone prints at the same resolution on a Linotronic as it does on a laser printer. Editing dithered images is virtually impossible; you can't even adjust the contrast and brightness. Furthermore, if you resize the image — for placing in a page-layout program, for example — you may wind up with ugly moiré patterns. (Actually, you *can* halve or double the size, but that's about it.)

In comparison, working with a gray-scale image is nirvana. You can resize and edit at will, adjust the contrast and brightness, lighten or darken (*dodge* or *burn*) selected areas, soften or sharpen, blend, smudge, or execute special effects using posterization (limiting the number of grays) and gamma correction (changing the brightness of selected grays). Additionally, you can output the image at whatever resolution your printer can handle.

Even so, a gray-scale image usually looks better on-screen than it does on paper, because a printer can't print grays. It has only black ink, so the image still has to be halftoned — that is, converted to a black-and-white dither pattern that simulates the original grays. But dithering on the output end means you can manipulate the gray-scale image to your heart's content *before* you print.

If, for some reason, you scan an image in the halftone mode and later want to convert it to gray scale, all is not lost. Both ImageStudio and Digital Darkroom can convert 1-bit, 300-dpi images into 4-bit, 75-dpi images. You lose three-fourths of the resolution, but you gain 16 grays that can be edited for maximum effect. Other gray levels are also available, with correspondingly lower resolutions.



## A Scan in the Hand

Scanners don't have to be big, serious, high-end office equipment. The small, mobile scanning wands recently introduced for the Macintosh have the Mac community abuzz over their signature-scooping, clip-art-collecting, and logo-lifting talents. These "personal scanners" can scan anything reasonably flat, albeit in narrow swaths. But you have to have a steady hand, or you'll wind up seeing double.

LightningScan, the first Mac hand scanner, was introduced last December by ThunderWare (Orinda, Calif.). It scans images of up to 4.1 inches wide at 100 to 400 dpi and has three dither patterns, a line-art mode, and adjustable brightness. The software has some image-editing tools and can save in several file formats.

LightningScan doesn't save grays, but on a Mac II the software can recover 16 gray levels from the dithered image. The scanning wand, which connects to the SCSI port, costs \$549.

ScanMan is a similar product from Logitech (Fremont, Calif.) that scans images up to 4.1-x-14 inches at resolutions of 100 to 400 dpi. Its DA software includes various editing functions but doesn't recover grays from halftones. Logitech's combination of scanner head, SCSI interface box, and software is \$499.

Yet another contender, NCL America (Sunnyvale, Calif.), should be shipping its hand scanners by the time you read this. Omniscan-105 (\$499) differs little from the others, except that it offers only one resolution, 200 dpi. NCL's second "hand-held" scanner, the gray-scale Omniscan-A4, stretches that definition just a bit. You can



New hand-held scanners such as ScanMan (left) and LightningScan can scoop up 4 inches of anything.

roll the 8.5-inch-wide platform over a letter-size page or let the original do the walking by snapping the scanning wand into a motorized transport for sheetfeeding. With 64 gray levels, true 400-dpi resolution (plus 200- and 300-dpi settings), and a \$1,350 price tag, the Omniscan-A4 competes with stationary scanners, lacking only the precision alignment of flatbeds.

Another elephantine handful, the JX-100 from Sharp Electronics (Mahway, N.J.), is a marvel of compact color scanning. You just place the 3.5-pound unit over the original (4-x-6 inches maximum), and it moves an internal scanning head across a viewing window. Color scans take three minutes or so; gray-scale images (64 levels) take 40 seconds at 200 dpi. The hardware costs \$995, including a cable to connect to the modem port (not the SCSI!). The software is another \$150; it saves to PICT and TIFF formats but has no editing features.

— Peter Weiss

PHOTOGRAPHY: PETER ALAN GOULD





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## How Much Gray?

How much gray do you really need? That depends on the image and how you plan to use it. For drawings, text, and other black-and-white images, a 4-bit scanner (16 grays) will probably suffice. High resolution and precise alignment are more important than gray levels for line art. Gray-scale images, on the other hand, need at least 64 grays (6 bits) to trick the eye into thinking they are continuous-tone photographs. Four-bit images have a banded, paint-by-numbers look in areas that are short on detail and long on subtle gray transitions, such as clouds. For low-end desktop publishing such as newsletter production, most people do fine with 1-bit dithered images. Even if you use traditional photographic halftones for your publications, digital halftones can serve as placeholders to indicate scaling and cropping.

If you prefer the editing power of grays but are printing on a 300-dpi laser printer, stick with a 6-bit scanner. The 64 grays it provides are more than adequate for that resolution. Why? Because halftoning requires a trade-off between resolution and gray levels. The more gray levels you want to simulate, the lower the printing resolution, and vice versa. At its default resolution of 53 dpi, the LaserWriter can show only 32 grays. (For a complete explanation of resolution, gray scale, and digital halftones, see "A Touch of Gray," February '89). Using a high-resolution typesetter such as the 2,540-dpi Linotronic 300 eliminates this consideration. If you have an 8-bit scanner, you can print halftones with 256 grays at magazine-quality resolutions (133 to 150 dpi). Even if you don't print all 256 grays (that number is usually more than you need), such a scanner gives you more control during the image-editing process.

## Fade to Black (and White)

Although gray-scale scanning can produce spectacular results, for many jobs it's neither necessary nor desirable. OCR, for example, is faster and more accurate in the line-art mode. *Line art* refers to images — such as drawings and text — that are black-and-white only, with no gray tones (although they can have dithered patterns).

## Realistic Pictures Require Many Grays



1-bit image



4-bit image



6-bit image



8-bit image



Scanned images vary in their ability to reproduce a continuous-tone photograph (top). The 1-bit image is black-and-white only; it creates the illusion of grays by dithering. The 4-bit scan has 16 grays, which aren't enough to prevent banding in transitional areas such as the clouds. The 6- and 8-bit scans display enough grays (64 and 256, respectively) to imitate continuous tone.





Setting scanning parameters is simpler for line-art images, but they demand more from the scanner's electronics than do gray-scale images. For a gray-scale image, the scanner simply rounds off a voltage to the nearest

gray level. But for line art, it must decide whether each pixel should be black or white, depending on the range of grays in the scan area. This process is called *thresholding*, and most scanners have a default value that adjusts automatically during scanning. All pixels darker than the de-

fault are turned black, while lighter ones become white.

The Apple Scanner has a threshold control that lets you change the default value. The inclusion of this control is fortuitous, since this particular scanner has the worst default thresholding of the

## Table 1: Features of Gray-Scale Scanners

	Abaton Scan 300/S	AGFA Focus S800GS	Apple Apple Scanner	Dest PC Scan 1000	Hewlett-Packard ScanJet Plus	Microtek MSF-300QS
Retail price	\$1,795	\$5,495	\$1,799	\$1,750	\$2,190	\$1,995
Cables included	yes	no, \$100	no, \$50	yes	no, \$60	yes
Software included	PanelScan Digital Darkroom	MC View Plus, \$495 extra	AppleScan HyperScan	Publish Pac	DeskScan DeskPaint	Digital Darkroom SuperPaint 2.0
OCR software (optional)	none	none	none	Text Processor, \$995*	none	MacinText, \$199
Sheet feeder (optional)	no	no	no	yes, \$595	yes, \$595	no
Warranty	90 days	90 days	90 days	90 days	1 year	180 days
<b>Hardware features</b>						
Resolution (dpi)	300	400	300	300	300	300
Bits per pixel	4	6	4	4	8	6
Gray levels	16	64	16	16	256	64
Scan area (inches)	8.5 x 14	8.5 x 13	8.5 x 14	8.5 x 13	8.5 x 13	8.5 x 14
RAM requirement	100K	1 Mb	660K	1 Mb	1 Mb	1 Mb
Engine manufacturer	TEC	AGFA	TEC	Canon	Canon	Microtek
Light source	green fluorescent	green fluorescent	green fluorescent	white incandescent	white fluorescent	white fluorescent
Interface	SCSI	SCSI	SCSI	SCSI (interface box)	SCSI (interface box)	SCSI
Power consumption	240 watts	85 watts	65 watts	240 watts	40 watts	192 watts
Dimensions (L x W x H, inches)	21.5 x 13.9 x 4.8	24 x 16.2 x 6.5	21.8 x 13.6 x 4.4	22.4 x 14.5 x 3.3	18.9 x 13.5 x 4.2	24 x 15.9 x 6
Weight	21.5 lb	40 lb	20 lb	25 lb	16.5 lb	26 lb
Controls on scanner	none	none	remote scan	none	none	none
IBM compatibility	yes	yes	no	yes	yes	yes
<b>Software features</b>						
Preview	yes	yes	yes	yes	yes	yes
Multiple modes in one scan	no	no	yes	no	no	yes
Resolution range (dpi)	300 only	100 to 800 <sup>†</sup>	75, 100, 150, 200, 300	200, 240, 300	12 to 1,500 <sup>†</sup>	75 to 300
Bits-per-pixel settings	4	6	4	4	4, 8	2, 4, 6
Image scaling (percent)	25, 33, 50, 66, 75, 100	1 to 100	25 to 100	13 to 200	4 to 200	25 to 400
Location of scanned image	disk	RAM	RAM	RAM	disk	RAM
Zoom	no	yes	yes	yes	yes	yes
Brightness/contrast	yes	yes	yes	no contrast	yes	yes
Gray-scale editing	no	yes	no	no	no	yes
Prints directly from program	no	yes	yes	yes	yes	yes
Printer halftone control	no	yes	no	no	no	yes
On-line help	yes	no	no	yes	yes	no
TIFF compression scheme	no	yes	no	yes	yes	no
File formats	TIFF, EPSF, MacPaint, PICT2	TIFF, PICT, EPSF, Paint, noncompressed	TIFF, PICT, MacPaint	TIFF, EPSF, MacPaint, SuperPaint, PageMaker 1.2	TIFF, PICT, MacPaint, EPSF, Clipboard	TIFF, PICT, PICT2, EPSF, MacPaint, Illustrator, Archive, ThunderScan

\* Text Processor is a board/software combination; if purchased with scanner, total package price is \$2,250.

<sup>†</sup> Addressable (not sampling) resolution, based on interpolation.

<sup>‡</sup> Images scanned at 300 dpi and then scaled to selected resolution; resolutions over 300 dpi do not have greater detail.



scanners we tested, requiring the most adjustments to produce optimum results.

## Space and Time

Once you get your hands on a gray-scale scanner, you may be tempted to scan everything at the highest resolution

and maximum number of grays. Don't. You'll be sorry.

Huge data files are the bane of gray-scale scanning (see Table 2). An 8.5-x-11-inch image scanned at 300 dpi with 64 gray levels takes up more than 6 megabytes. Even a 4-x-5-inch image with a mere 16 grays claims a whopping 900K. Most of the scanning programs have compression schemes that reduce TIFF-file sizes, but although compression works well on 1-bit images, compression ratios for multibit images are fairly low. You'll probably wind up using shareware file-compression utilities such as StuffIt or PackIt to conserve disk space.

Most scanning programs can save files in other formats, such as Paint, PICT, and EPSF. These formats are accepted by more programs than are TIFF files, but they can't be edited in gray-scale applications. Furthermore, EPSF images are even bigger than TIFF files — up to four times as large! (For more information on file formats, including a table of programs and the formats they accept, see "Graphic Examples," April '89).

Obviously, you'll need a substantial hard disk to accommodate these space hogs. It takes only three 6-megabyte images to fill a 20-megabyte hard disk. Removable media are another alternative, especially if you make trips to a service bureau.

You'll also need lots of RAM. Six of the scanners send images to RAM; only the Hewlett-Packard and Abaton models scan data directly to disk. Several scanners ran out of RAM (on an 8-megabyte Mac II) while scanning an 8.5-x-11-inch photograph. The software for the AGFA, Datacopy, and Microtek scanners avoids this pitfall by telling you how much space

a given scan requires. Datacopy's MacImage also shows you how long a scan will take — a nice touch. Gray-scale images also take a long time to scan, save, retrieve, edit, and print. Abaton's Scan 300/S was the tortoise to Microtek's hare during our testing. Dest's PC Scan 1000 fared well during scanning, but it took an astounding seven minutes to save the 8.5-x-11-inch gray-scale image to disk.

If your service bureau charges by the minute, printing gray-scale images can bankrupt you in a hurry. Most scanners let you pick the scan resolution and number of bits, so use the lowest resolution and fewest grays you can without jeopardizing image quality. Use the smallest possible image area, and crop your images *before* test-printing them.

## Soft Sell

Since scanners are controlled entirely through software, the programs that come with your scanner are as important as the machine itself. Scanning software is as diverse as the hardware is similar, so test-drive the scanner *and* software before taking the financial plunge.

The software we tested ranged from the minimalist offerings of Abaton and Dest to the supermarket of selection in Datacopy's MacImage (see Table 1). Editing power and tools vary widely from scanner to scanner. All the programs except Abaton's PanelScan offer basic paint tools, but none has the gray-scale-editing sophistication of Digital Darkroom or ImageStudio. Rather than compete, Microtek has implemented its scanner driver as plug-in modules for both Digital Darkroom and SuperPaint, which come bundled with the scanner.

Some scanner companies are making it easier to scan from within other pro-



New Image MacScanPro	Xerox Imaging Systems Datacopy 730GS
\$2,495	\$1,995
yes	yes
MacScan	MacImage
TextScan, \$395	AccuText, \$995 MacOCR, \$695
no	no
1 year	1 year
300	300
8	6
256	64
8.5 x 11	8.25 x 11.75
1 Mb	1 Mb
Canon	Ricoh
white incandescent	green fluorescent
SCSI (interface box)	SCSI
240 watts	156 watts
21.6 x 14.5 x 3.8	19.5 x 11.4 x 4.1
25 lb	10.5 lb
none	none
no	yes
no	yes
75, 150, 200, 300	60 to 450 <sup>6</sup>
4, 6, 8	4, 6
none	1 to 600
RAM	RAM
yes	yes
no contrast	yes
yes	yes
yes	yes
no	yes
yes	no
yes	yes

TIFF, PICT, EPSF,  
MacPaint, Super-  
Paint, PostScript,  
PageMaker 1.2

TIFF, RIFF, PICT, Paint,  
SuperPaint, PostScript,  
EPSF, PageMaker 1.2

Gray-scale files are real space hogs. These file sizes (in kilobytes) are for images scanned at 300 dpi and saved as uncompressed TIFF.

**Table 2: File Sizes (Kilobytes)**

Image size	Number of bits			
	1	4	6	8
4 x 5 inches	225	900	1,350	1,800
8.5 x 11 inches	1,050	4,200	6,300	8,400





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# Capsule Reviews



PHOTOGRAPHY: PETER ALAN GOULD

Our gray-scale scanner lineup demonstrates that all flatbed models look pretty much the same. Left column: MacScanPro, PC Scan 1000, ScanJet Plus. Center: Scan 300/S, MSF-300QS. Right: Focus S800GS, Datacopy 730GS, Apple Scanner. Three of the scanners come with external SCSI interface boxes, like the one shown for MacScanPro (top right).

## Scan 300/S

By implementing its scanner driver as a cdev, Abaton has made scanning from within applications convenient. Although 4 bits isn't enough to achieve the continuous gray tones necessary for photographs, superior text extraction makes it a good choice for OCR. Abaton also markets a \$1,495 model with a smaller scan area and an external SCSI interface.

**Pros:** Bundled with Digital Darkroom. PanelScan, the cdev, scans directly to disk, using less than 100K of RAM during scans. Easy to use, simple software. **Cons:** Poor resolvability; limited control of scanning; can't scan at resolutions below 300 dpi; poor-quality previews; no image-editing capabilities; no file-compression scheme; slow scanning times; no print option.

**Abaton Technology**  
48431 Milmont Drive  
Fremont, CA 94538  
(415) 683-2226  
\$1,795

## Focus S800GS

At two to three times the price of 300-dpi scanners, AGFA's 400-dpi scanner offers the superior resolution required for high-end, all-digital publishing. It interpolates to

achieve addressable resolutions of up to 800 dpi. Its professional-quality MC View Plus software has gray-scale editing features and numerous printing options. AGFA also markets the S600GS, a 300-dpi scanner with a 600-dpi addressable resolution.

**Pros:** Superior resolvability; good halftone quality. Extensive postscan editing features. Vectorizes line art and halftones. Can control screen frequency and angle of printer halftones. Knows output formats of several DTP programs. Prints sections of scans. Displays RAM requirements for scans. Continuously checks for viral infections. **Cons:** Expensive. Not easy to learn; uses photographic and publishing terminology.

**AGFA Compugraphic**  
90 Industrial Way  
Wilmington, MA 01887  
(508) 658-5600  
\$8,090 with software and cables

## Apple Scanner

Apple has produced another well-designed plug-and-play product. It's the easiest scanner to learn and use, with intuitive controls. A good choice for general scanning, although 4 bits isn't enough to achieve continuous gray tones.

**Pros:** Bundled with AppleScan and HyperScan, which scans images directly into Hyper-

Card stacks. Excellent manual and tutorial. Remote Scan button. Can have two scan windows with different resolutions and scan modes within same scan. Scans irregularly shaped areas. Customizable halftone patterns. Can set Startup Prefs for scan parameters. User-adjustable threshold control. Adaptive filter converts scanned gray-scale images to halftones. Prints sections of scans. **Cons:** Poor default thresholding for line art; worst overall at text extraction. AppleScan can't open TIFF files (only PICT). No file-compression scheme.

**Apple Computer, Inc.**  
20525 Mariani Ave.  
Cupertino, CA 95014  
(408) 996-1010  
\$1,849 with cables

## PC Scan 1000

Dest's 4-bit scanner is the least expensive model we tested. Sixteen grays aren't enough to achieve the continuous gray tones necessary for photographs, but this scanner's a good choice for OCR. Publish Pac software includes rudimentary OCR, but it's intended for low-end DTP only. Dest also offers a sheetfed model.

**Pros:** Good text extraction. Optional hardware/software package, Text Processor, for speedy OCR. Automatic sheet feeder available.



**Cons:** Resolvability only fair. Displays gray-scale scans as halftones. No contrast adjustment; limited image editing. Very slow at saving images to disk. External SCSI interface box.

**Dest Corporation**  
1201 Cadillac Court  
Milpitas, CA 95035  
(408) 946-7100  
\$1,750 with interface box

## ScanJet Plus

This 8-bit scanner provides high performance at a very reasonable price. By implementing its scanner driver as a desk accessory, Hewlett-Packard has made scanning from within applications more convenient. The Desk Gallery Plus software includes two DAs, DeskScan and Zedcor's DeskPaint. The scanner can interpolate to achieve addressable resolutions of up to 1,500 dpi.

**Pros:** Unique Live Preview, which shows full-gray image and allows interactive adjustments to scan parameters. Excellent resolvability of text and line art; good text extraction for OCR. Easy-to-use software with superior on-line help. Scans directly to disk, avoiding RAM overload. Compensates for changes in light intensity. Automatic sheet feeder available. **Cons:** No gray-scale editing tools. External SCSI interface box. Somewhat limited gray range for an 8-bit (256 grays) scanner.

**Hewlett-Packard Company**  
700 71st Ave.  
Greeley, CO 80634  
(303) 350-4000  
\$2,250 with interface box and cables

## MSF-300QS

Microtek, one of the first scanner manufacturers, has implemented its driver as plug-in modules for Digital Darkroom and SuperPaint 2.0, which are bundled with the scanner. Microtek also markets several other scanners, including sheetfed and 8-bit models.

**Pros:** Excellent gray-scale editing and printing tools available in Digital Darkroom. Can have up to four scan windows within same scan that mix line-art and halftone modes. Good range of grays. Shows image size and available RAM. Fast scanning times. User-adjustable threshold control. **Cons:** Extremely poor extraction of "difficult" text. No file-compression scheme. Scanner light always on.

**Microtek Lab, Inc.**  
16901 S. Western Ave.  
Gardena, CA 90247  
(213) 321-2121  
\$1,995

## MacScanPro

New Image Technology doesn't even relabel the Canon IX-12F scanner; it just adds its own interface box and MacScan software. It has upped the ante to 8 bits (256 grays), though. New Image also offers a sheetfed version and less expensive 1-bit scanners.

**Pros:** MacScan software can drive the Sharp JX-450 color scanner and Fujitsu high-speed scanners. Can change default scan settings. Can convert 300-dpi halftones into 75-dpi gray-scale images. Can type PostScript instructions in Print dialog. User-controllable light calibration. **Cons:** No preview scan. Extremely poor extraction of "difficult" text. No contrast setting or image scaling. Small scanning area (8.5-x-11 inches). External SCSI interface box.

**New Image Technology, Inc.**  
9701 Philadelphia Court  
Lanham, MD 20706  
(301) 731-2000  
\$2,495

## Datacopy 730GS

This compact scanner is an excellent choice for all types of scanning. It offers the best software, MacImage, which sports a panoply of scan-control and image-editing features. The newest scanner from Xerox-Datcopy, it occupies the low end of that company's 300- and 400-dpi gray-scale scanner line.

**Pros:** Excellent halftone quality. Superior gray range with good shadow detail. Good interface, with Short Menus option. Can customize dither patterns and save scan parameters. Mixed Line Art mode for capturing halftones and line art in one scan. Edge-detection feature for outlining line art. Gray-scale editing features, including gamma correction and numerous contrast effects. Excellent printing options, including control over halftone screen frequency and angle, and ability to print sections of scans. Displays time and memory requirements for scans. **Cons:** Resolvability and text extraction only fair. Confusing overlap of functions in Scan Selection, New Scan, and Imaging Styles commands. Small scanning area (8.25-x-11.75 inches).

**Xerox Imaging Systems**  
Datacopy Corporation  
1215 Terra Bella Ave.  
Mountain View, CA 94043  
(415) 965-7900  
\$1,995

grams by creating their drivers as cdevs or desk accessories rather than as stand-alone programs (see "Scannectivity" sidebar). Hewlett-Packard's software package, Desk Gallery Plus, consists of two DAs, DeskScan and Zedcor's DeskPaint. Abaton's scanner comes with PanelScan, a cdev that can be accessed from within any application. PanelScan scans directly to a prenamed file on disk, so it needs only about 100K of RAM. Unfortunately, it has no postscan view or editing tools of any sort.

Be sure that your scanner software offers a preview — a quick, low-resolution scan that helps you select which part of the image you want for the actual, full-strength scan. Typically, previews are dithered images that don't work for adjusting contrast or brightness. The exception to the rule is DeskScan's Live Preview, which sacrifices detail for an actual gray-scale image. If you adjust the contrast or brightness, the preview reflects the changes without requiring a rescan.

At the other extreme, PanelScan's previews are so poor that they are practically worthless — gray-scale images appear as solid black blobs. New Image's MacScan offers no preview at all, a crippling oversight. Instead, you use rulers to guess at the location of the section you want and perform repeated scans and repositionings until you locate it precisely. If you ever scan in a halftone and then wish it were gray scale, however, MacScan is the only program you can use to convert 300-dpi halftones to 75-dpi, 4-bit gray-scale images.

All the scanners have settings for line art, halftones, and gray scale. The Microtek, Apple, and Datacopy scanners let you mix halftone and line-art modes in a single scan for those times when text and continuous-tone graphics share the same page. With Microtek, you select the overall image to be scanned and then select up to three smaller areas that can be set to line art while the rest of the image is halftoned, or vice versa. AppleScan has two nonoverlapping windows, which can have different resolutions as well as different scan modes (including gray scale). Datacopy has only one window, but its Mixed Line Art mode lets you capture line art and halftones in one scan.





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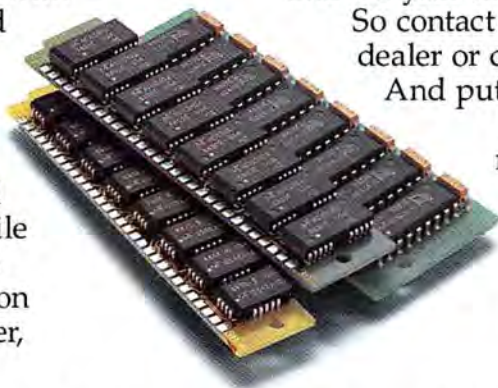
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2805 E. COLUMBIA ROAD, BOISE, IDAHO 83706 (208) 386-3900

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All the programs except MacScan let you scale images during the scanning process to match the size you need for placement in a document or for printing — you usually end up with better image quality than if you resize the image later within an application. Scaling an image down also helps conserve RAM and disk space. PanelScan is the only program lacking a zoom feature for closeup views of scanned images.

### Special Features

Datacopy's MacImage and AGFA's MC View Plus have the best-rounded set of features, including a broad range of scan settings and dither patterns, and postscan control over brightness, contrast, and gamma correction. (Actually, Microtek has the most powerful software, if you count Digital Darkroom.) By contrast, Dest's Publish Pac has no image editing and can display gray-scale im-

ages only as halftones.

Both MacImage and Apple's AppleScan let you customize dither patterns and save scan parameters for later use. MacImage enables you to burn (darken) and dodge (lighten) selected gray regions of scans. MC View Plus knows the right output format for a variety of page-layout programs, and it's the only package that continually checks for viral infections (it told us when we became infected with nVIR).

If you like the auto-tracing features of programs such as Illustrator 88, you'll appreciate the Edge Detection mode of MacImage, which outlines line art during the scanning process. MC View Plus has a more sophisticated version of this feature, called vectorization, which can convert line art and halftones into object-oriented images with Bezier curves, images that can be saved as Illustrator files.

PanelScan is the only program that

cannot print images directly. MC View Plus and MacImage have particularly strong printing features, including halftone settings and the ability to print sections of scanned views. (Again, Microtek's use of Digital Darkroom gives it a leg up in this area.)

The Apple Scanner is bundled with AppleScan and HyperScan, which scans images directly into HyperCard stacks. You can move images from scanners into HyperCard without it — via the Clipboard or Scrapbook — but HyperScan makes it easy. AppleScan lets you scan irregularly shaped areas, and an adaptive filter converts scanned gray-scale images into halftones. Amazingly enough, AppleScan can save but not open TIFF files; it opens only PICT-format files.

Four scanners have optional OCR packages. Dest's Text Processor is a board-based system that provides faster scanning times than does software-based OCR. Datacopy's AccuText rivals stand-alone OCR packages; as for the others, you're better off buying OCR software separately (see "Light Reading" sidebar).



### Scannectivity

Scanning can sometimes be a frustrating experience. Usually you must leave the application you're working in, open the scan program, scan the image, save it, exit from the program, reopen the original application, and — finally — import the scanned image.

Abaton and Hewlett-Packard save you all that effort by having their scanners scan from the Control Panel (in the case of Abaton's PanelScan) or a DA (HP's DeskScan). But a movement is afoot for a more general solution. The Apple Scanner's software interface (the specifications controlling application-to-scanner communication) is slowly but surely becoming a standard, making it possible to drive any scanner from within any application.

For this system to work, both the applications and the scanners must implement the interface. Then they can automatically "see" each other and communicate effortlessly. More and more programs — Digital Darkroom, ImageStudio, SuperPaint, QuarkXPress, OmniPage, Read-It! — can now drive the Apple Scanner. On the hardware side, Abaton, Dest, Microtek, New Image Technology, and Xerox Imaging Systems plan scanner interfaces that follow Apple's specifications.

In theory, you should be able to mix and match these applications and scanners at

will, but we haven't tested that yet — Apple-spec interfaces on non-Apple scanners are just beginning to emerge.

A Chooser-selectable scanner is another potential solution — perhaps the cleanest one — to the plethora of scanner drivers. You would select a scanner from the Chooser just as you do with a printer. Then, by issuing a command from the menu, you'd get a Scan dialog much like the current Print dialog. Unfortunately, this idea hasn't caught on, although Nuvo Labs (San Luis Obispo, Calif.) is developing Chooser-selectable scanner drivers that it hopes to market to scanner manufacturers.

In lieu of a standard, software developers Silicon Beach and Letraset have reworked Digital Darkroom and ImageStudio to accept user-installable "plug-in" scanner drivers (the modules are free for the asking from the scanner makers). Once you've dropped the appropriate module into the program's folder, it knows how to run your scanner, and you have scanning control from its menus. Digital Darkroom works with plug-in modules for Apple, Microtek, Abaton, and New Image scanners. ImageStudio works with only one module so far, for the Apple Scanner, but it will eventually work with scanners from Microtek and Xerox Imaging Systems.

— Peter Weiss

### Testing, Testing

AGFA's Focus S800GS, with its all-metal case, is the heaviest and sturdiest scanner we tested. (It's also the noisiest, but just during scans.) The Datacopy 730GS is the sleekest, with the smallest footprint — a mere 222 square inches, compared with AGFA's 389.

All the scanners connect to the Mac's SCSI port, although three — the Dest, Hewlett-Packard, and New Image models — require special interface boxes and cables because they come with non-SCSI connectors. Dest's interface box is particularly cumbersome, with a 90-square-inch footprint, a separate power supply, and a tangle of cords and plugs.

We evaluated the scanners in five major areas: image sharpness, gray range, halftone quality, OCR capabilities, and ease of use (see Table 3). All scans were at 100-percent scaling, 300-dpi resolution (400 for the AGFA), and default contrast and brightness values. Then, to get the best performance possible from each scanner, we ran additional scans at optimized settings. All images were saved as uncompressed TIFF files.



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## Comparative Scans in Line Art and Gray-Scale Modes

<b>Abaton</b>	abcdefghijklm			
<b>AGFA</b>	abcdefghijklm			
<b>Apple</b>	abcdefghijklm			
<b>Dest</b>	abcdefghijklm			
<b>HP</b>	abcdefghijklm			
<b>Microtek</b>	abcdefghijklm			
<b>New Image</b>	abcdefghijklm			
<b>Xerox Datacopy</b>	abcdefghijklm			
<b>Original</b>	abcdefghijklm			

Here are some of the test results, so you can judge for yourself how well each scanner reproduces text, line art, and photographs. All images were enlarged from their original size in order to see the fine details. The examples include 4-point type, two sets of line art (originally 3.2 and 4.5 line pairs per millimeter), and a street sign from the San Francisco photo, which was printed on a Linotronic 300. This ability to manipulate halftones is a scanner's strength. Don't expect it to replicate the quality of a traditional halftone, because it won't.



Enlarged section of halftone

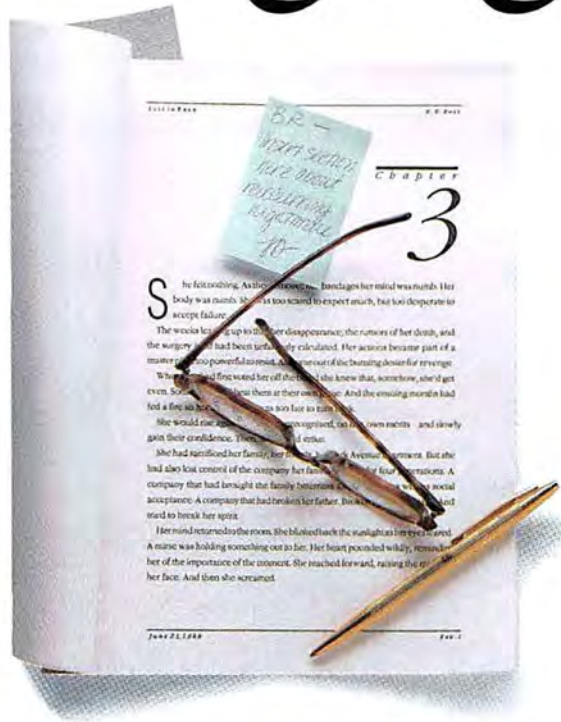
Traditional halftone, original size



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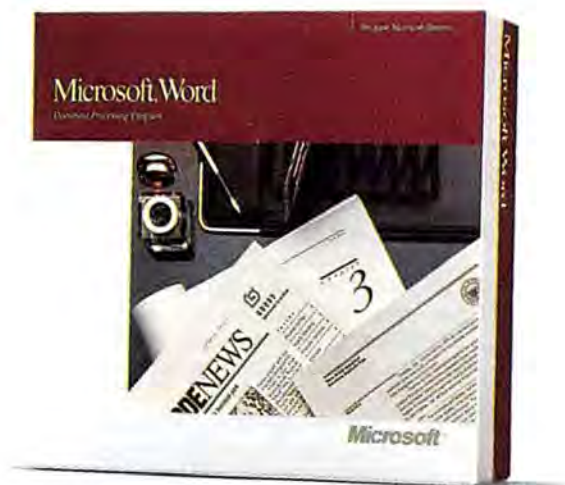
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**Unresolved Differences:** To determine resolvability (how well the scanners picked up details), we scanned the Image System Test Target in the line-art mode. This test sheet, available from the Patent and Trademark Office, contains a series of shapes, line pairs, and text of varying sizes. We looked for blurring in the smallest line pairs and deformities in the four-point type to determine the minimum feature size each scanner could clearly see.

As expected, the AGFA left the other scanners in the dust; its 400-dpi resolu-

tion enabled it to resolve even the finest details of text and line art. Hewlett-Packard's ScanJet Plus had the sharpest image of the 300-dpi scanners, and Abaton's Scan 300/S had the worst.

**Grading the Grays:** Most scanners "see" only a limited range of grays, so we gave them a vision test. We scanned 16 blocks of a Kodak Gray-Scale Test Strip, which has 20 blocks of gray of increasing intensity, and counted the number of gray levels each scanner sensed. As expected, the 4-bit scanners (Abaton, Apple, Dest) didn't see as many grays as the 6- and 8-

bit units did. The 6-bit Microtek scanner actually picked up more grays than did the 8-bit ScanJet Plus.



**Halftone Quality:** Nearly everyone who uses a scanner scans photos, and we're no exception. We repeatedly scanned black-and-white photos of a country cabin and of San Francisco in both gray-scale and halftone modes to see how well the scanners handled grays and how accurately they dithered halftones.

Then we printed two halftone images for each scanner, one at default settings and the other optimized. The 300-dpi halftones were output on a LaserWriter IINTX; the AGFA's 400-dpi output went to an AGFA P3400 PS laser printer. In a blind test, a five-person panel judged each picture's shadow detail, highlights, fine detail, and contrast.

The AGFA's high resolution again put it atop the heap. The Datacopy 730GS also did well, displaying a wide range of grays and good shadow detail.

**Text Extraction:** OCR is a popular use for scanners, so we evaluated how well each one could separate text from its background. Scanners that are better at thresholding extract text more successfully and thus provide images that OCR software can read more accurately.

We used the scanners' own software to scan newspaper articles and examples of "difficult" text — poorly printed, low-contrast, and colored text on colored backgrounds. The scans were done in the default line-art mode and again at optimized settings. We then read the scanned samples with Caere's OmniPage and compared its output with the actual text, using the percentage of correct words to rate the scanner's thresholding skill.

The Abaton and Hewlett-Packard scanners excelled at text extraction, distinguishing even the most difficult text with ease. The AGFA's 400-dpi resolution provided superior results when picking up the fine type in a phone book, even after it had been photocopied twice. Unfortunately, the higher resolution worked against it in the other tests, because it picked up too many background details.



## Light Reading with OCR

Man does not communicate by pictures alone — that went out with the Egyptians — but until recently, that's about all Mac users could do with their scanners. No more. Optical character recognition (OCR) has become a hot property, and scanners have now become viable text-entry devices.

The sheer diversity of Mac OCR products now available is a clear indication of how important this market has become. For the casual user, there's Olduvai's Read-It! (see this month's Quick Clicks), at \$495. For businesses that input tens of thousands of pages every month, Calera (Santa Clara, Calif.) has the networkable Compound Document Processor (CDP) 9000, a hardware/software combination that offers impressive speed and goes for a whopping \$29,950. The software, TopScan/Mac, is another \$695. And there are at least half a dozen other packages that fall between these extremes.

The Mac's first OCR program (Read-It!) wasn't a watershed. That distinction goes to OmniPage from Caere (Los Gatos, Calif.). Even though the \$695 program had limitations — lots of them — it represented a major advance in Mac OCR technology. It was fast and accurate and could recognize most plain fonts, so you didn't spend enormous amounts of time teaching it the alphabet (see Quick Clicks, March '89). Apple quickly saw the program's potential and jumped on the bandwagon, and that extra push got Mac OCR moving. The latest incarnation of OmniPage, version 1.1, directly drives scanners from Apple, Dest, Hewlett-Packard, and Microtek.

Caere's accomplishments came at a price, however. OmniPage was inflexible. Not only could it not recognize styled fonts or unfamiliar characters, but you couldn't teach it ei-

ther. What was missing was a high-powered, teachable OCR package. Enter TextPert, the \$695 package from CTA (New York, N.Y.) that reads styled fonts and foreign characters and can be taught new characters as necessary, provided you are willing to spend 15 minutes to an hour doing so.

Software-based OCR such as TextPert is flexible, but the trade-off is that it's slow. To maximize speed, developers are turning to hardware-based OCR, and Calera is a leader in this trend. Calera's CDP 9000 has no character-learning capabilities, but by using four Motorola 68000 processors, it can scan and recognize a formatted, letter-size page in less than 15 seconds — usually much less. Dest's Text Processor (\$995) is another hardware-based system that trades flexibility for speed.

To an extent, OmniPage presaged this development too. By requiring a Mac II and 4 megabytes of RAM, Caere was clearly pointing toward a much more powerful level of OCR. And that's exactly where things are headed.

AccuText, from Xerox Imaging Systems (marketed through Datacopy), is a \$995 software package with enough built-in artificial intelligence (thus the new acronym ICR, for intelligent character recognition) that it can read and preserve italics, underlining, type-size changes, indents, columns — even skewed text and fax transmissions. AccuText can drive the Datacopy scanners (natch), plus the Apple Scanner and Hewlett-Packard's ScanJet and ScanJet Plus.

Although most scanners are still being used as image-entry devices, OCR's success may change that. As the Egyptians found out, sometimes words are more powerful than pictures.

— Russell Ito



The Microtek and New Image scanners bottomed out in the difficult-text department; they had trouble separating text from shaded or colored backgrounds, and there was much blurring and touching of letters. The Apple Scanner actually did worse on the newsprint than on the difficult text, and we spent more time optimizing its scans than those of the other scanners.

You can probably improve on these results by fiddling with the scan parameters, but we do wish scanner manufacturers would include a scan mode specifically

for text extraction. Users could specify whether the printed matter was newsprint, colored text, or background; the font size; and so on. The scanner would then pick the ideal threshold and resolution settings to optimize text extraction under those conditions.

**Ease of Use:** No mystery here — how friendly, how easy to use, how powerful is the software that comes with each scanner? Three first-time users rated each scanner on its ease of use (for controls such as brightness, contrast, scaling, and zoom), image-editing power, and help-

fulness of "help" information.

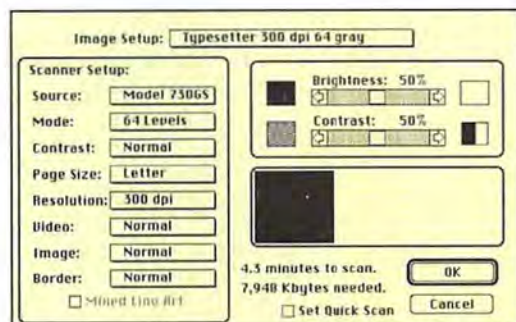
The Apple Scanner was the favorite in this category for its excellent manual, tutorials, and intuitive controls. Although they pack a lot of power, both the Datacopy 730GS and ScanJet Plus are easy to learn and use, with good manuals and nice interfaces. The ScanJet Plus also has an impressive on-screen help file, and the Datacopy has a Short Menu option for users who want to keep it simple.



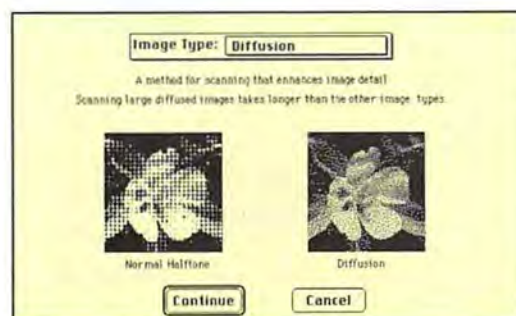
## Selecting the Software



Abaton's PanelScan is a cdev that lets you scan from within any application, but it has only one dialog, with a poor-quality preview and the bare minimum in features.



Datacopy's MacImage is a supermarket of selection — and this is just the Image Setup window. It has an extensive list of scan settings and even tells you the scanning time and resulting file size.



Hewlett-Packard's DeskScan comes with excellent on-line help that visually explains scanning terms and special effects.

## Scanning the Future

Will the scanner you buy today be obsolete six months or a year from now? Since 256 levels of gray is enough for most scanning purposes, you don't have to worry about grayer machines appearing on the scene. Instead, the trend in high-end scanning is toward greater and greater resolution. With higher resolution, you'll see finer detail, and jaggies will become a historical footnote. Siemens, which competes with AGFA and Microtek in the expensive 400-dpi market, plans to have a 600-dpi scanner within a year or so.

Look to laser printers, not scanners, for the next revolution in desktop publishing. Companies such as DP-Tek and Seikosha are pioneering printer technologies that use variable dot sizes and/or true grays. Such breakthroughs will truly revolutionize the appearance of halftones, line art, and text printed on a 300-dpi printer — or on a high-resolution typesetter.

**MacUser Labs Editor Aileen Abernathy showed some amazing grays herself during the course of this report. Peter Weiss is a free-lance wordsmith, specializing in science and technology topics.**

## Kudos

MacUser Labs would like to thank technical consultant Ken Holt, project leader Jeff Pittelkau, and the members of our advisory panel: Dean Buck, Hewlett-Packard; Dave Rose and Jim McNaul, Xerox Imaging Systems; Stan Fry, Dest; and John Kozlowski, Microtek. The pictures of San Francisco and the cabin were used with the permission of photographer William E. Reister.





## Testers' Choice

For the best combination of price and performance, you can't go wrong with either the **Datacopy 730GS** or Hewlett-Packard's **ScanJet Plus**. The 6-bit Datacopy (\$1,995) is a compact machine with a superior gray range and excellent halftones, making it a good choice for most desktop-publishing needs. Datacopy's MacImage is the best scanning software we've seen; it contains an impressive array of features for both prescan (customizable dither patterns, mixed line art) and postscan (gamma correction, printer halftone control) maneuvers.

For \$250 more, you can move up to the 8 bits (256 grays) of the ScanJet Plus. This versatile machine offers excellent resolvability of text and line art, equally fine text extraction, and good halftone quality. Its scanner driver, DeskScan, is implemented as a DA, which makes scanning from within applications easy. It has the only gray-scale preview and the best on-line help.

If you want 64 grays and hanker for more editing power, consider Microtek's **MSF-300QS** (\$1,995). Its driver is a plug-in module for Digital Darkroom and SuperPaint 2.0, both of which are bundled with the scanner. Although the MSF-300QS is not in the same league as the Datacopy and ScanJet Plus machines, its features and the power of its bundled software make it worth a look.

If your primary need is OCR and you don't need the bells and whistles (or prices) of the 6- and 8-bit scanners, check out Abaton's **Scan 300/S** or Dest's **PC Scan 1000**. The Scan 300/S (\$1,795) had the highest scores on text extraction, and its driver, PanelScan, is a

cdev, which means you can scan from within any program. The PC Scan 1000 (\$1,750) provides good text extraction, and it has an optional sheet feeder and hardware-based OCR package, Text Processor, for fast, high-volume OCR. The package price including Text Processor is \$2,250, a combination that might be hard to beat.

For a simple plug-and-play scanner, a no-frills unit that's easy to learn, check out the standard-because-of-its-name **Apple Scanner** (\$1,849). Sixteen grays don't provide high-quality halftones, but it's a solid, midrange scanner. Its Remote Scan button provides one-touch scanning; you can have two resolutions and scan modes in a single scan; you can scan irregularly shaped areas; and HyperScan lets you scan images directly into HyperCard.

We really can't recommend the New Image **MacScanPro** (\$2,495). It has some nice features — its MacScan software can drive other scanners, and it does postscan editing — but we feel its lack of a preview scan is a crippling defect.

Finally, there's our 400-dpi entrant, the AGFA **Focus S800GS** (\$6,090). Its combination of superior resolvability, excellent halftone quality, and good text extraction make it the publisher's dream machine, albeit a pricey one. Its professional-quality software, MC View Plus, provides excellent scan control and a variety of postscan editing effects. We can't recommend it for everyone, but if you do high-end DTP or are scanning highly detailed images that require great precision — say, aerial photos — the AGFA may be the scanner for you.

**Table 3: Scanner Ratings (scale of 1 to 10)**

	Resolvability	Gray range	Halftone test	OCR: newsprint	OCR: difficult	Ease of use
Abaton Scan 300/S	4	6.3	6	10	9.5	7
AGFA Focus S800GS	10	9.4	8.5	8.8	7.5	7
Apple Apple Scanner	6	6.9	5.5	5	6	8.5
Dest PC Scan 1000	5	7.5	5.5	10	6	7
Hewlett-Packard ScanJet Plus	7	8.8	8	8.8	8.2	8
Microtek MSF-300QS	6	10	5.5	8.5	2.5	6
New Image MacScanPro	6	10	5.5	8.8	2.2	6.5
XIS Datacopy 730GS	5	10	6.5	7	6	7.5

The test results for each scanner were converted to a 1-to-10 scale, with 10 being a perfect score.

**Resolvability:** The Image System Test Target was scanned in line-art mode. Lower scores indicate a blurring of line pairs or defects in letter shapes.

**Gray range:** Sixteen blocks of a Kodak Gray-Scale Test Strip were scanned; the number each scanner reproduced was converted to a 10-point scale.

**Halftone quality:** A live-person panel judged the image quality of two photos scanned in halftone (dithered) mode and output on a laser printer. The two best scores were averaged for each scanner.

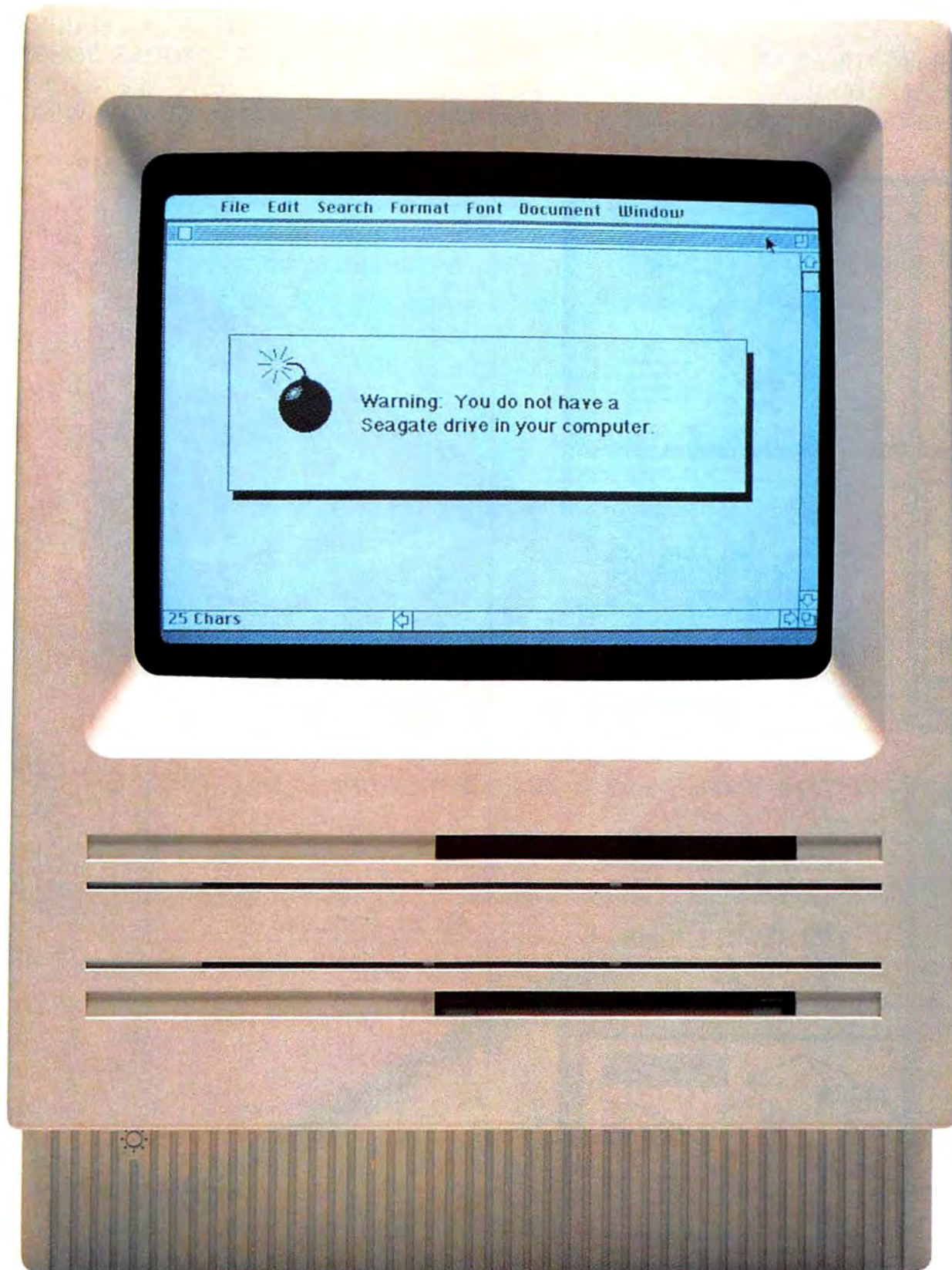
**OCR:** The text-extraction test evaluated a scanner's ability to separate text from its background. Text was scanned in the optimal line-art mode. The

percentage of correct words read by OmniPage was converted to a 10-point scale. The newsprint test used a 200-word newspaper article; the second test used unusually difficult samples, including photocopied, colored, and blurred text.

**Ease of use:** We averaged the evaluations of three testers who rated the scanning software on ease of selecting a scan area, accessibility of scanning from within other applications, the power and intuitive logic of the controls and editing tools, and the number of clicks it took to carry out a simple scan.

**Note:** MacScanPro 1.49 doesn't work with OmniPage; version 1.26 was used instead.





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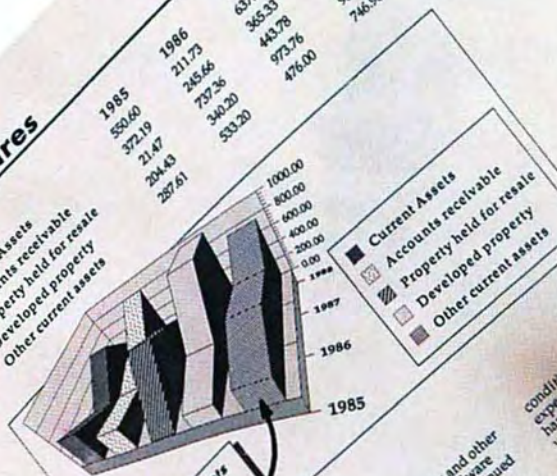
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Other current assets

	1985	1986	1987	1988
Current Assets	550.60	211.73	637.61	115.67
Accounts receivable	372.19	245.66	365.33	708.15
Property held for resale	21.47	737.26	443.78	13.62
Developed property	204.43	340.20	973.76	950.67
Other current assets	287.61	533.20	476.00	746.98



Other current assets include undeveloped properties owned by United Wares.

## Asset Restructuring Program

In the fourth quarter, the company undertook a restructuring program which resulted in a \$1.2 million pretax gain. To recognize the changing nature of certain major business operations, this program contains costs associated with excess capacity adjustments in stock, branch line yard, terminal not being completely utilized, excess capacity associated with the Company's Louisiana wood isle treating plant and its Arkansas sawmill, impairment of carrying values of other non-operating properties

and investments and other related costs. Hardware properties have continued to experience declining levels of sales in a number of reasons, with future prospects uncertain. Considering current business capacity, the excess capacity was written off. The write-down of the Company's energy investments in hardware properties reflects current prices and declining demand.

This program is similar to programs and write-offs announced earlier in 1986 and 1985 by numerous other hardware property companies and represents a recognition of conditions being experienced by the hardware industry as a whole. Although resulting in a \$1.2 million reduction in net worth, the program has no immediate impact on cash flow, liquidity, or the fundamental value or capabilities of the Company. In the longer term, the results of the program are expected to enhance future earnings as a result of reduced depreciation expense applicable to excess capacity and also place United Wares among other hardware companies who have recently undertaken similar programs.

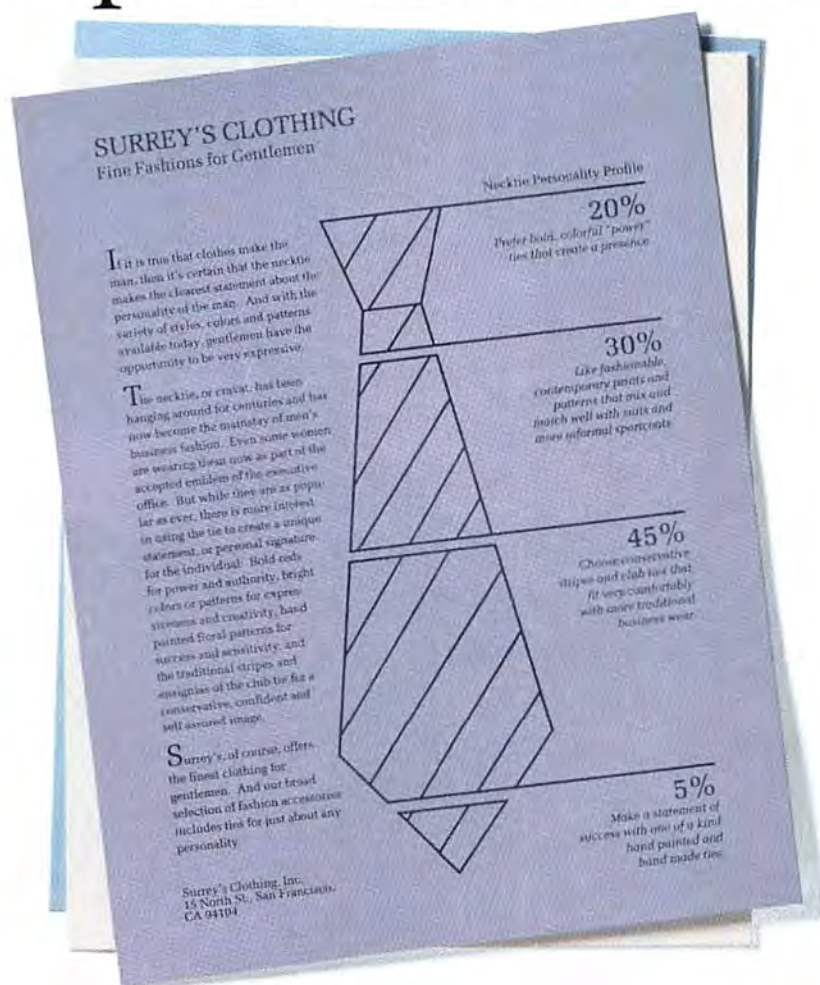


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# DTP

EDITED BY  
AILEEN ABERNATHY AND  
SALVATORE PARASCANDOLO

Getting the right photographs in the right places isn't as easy as it seems. In *Fine Print*, Tony Bove and Cheryl Rhodes offer advice to help you minimize photo switcheroos. *Between the Lines* highlights new entries in the typography marketplace. Last but certainly not least, *Desktop Reviews* examines *Ready, Set, Go!* 4.5, *KeyCap Fonts*, *LetrTuck*, and *UltraSpec*.

## Contents

### Between the Lines

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■■■■■■■  
If you have a few tricks of the trade to share, send 'em to  
DTP, c/o MacUser,  
950 Tower Lane,  
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## BETWEEN THE LINES

### FRed Font Machine

The font-design field has long been dominated by Altsys' Fontographer. But competition in this niche has recently heated up. FRed Font Machine (FRed stands for Font Resource Editor) is the working title for a new font-creation and font-editing package from AB Vista.

FRed comes with a complete set of Bezier tools for producing downloadable PostScript fonts, and it can also output font outlines and composed text in PICT and Illustrator 88 formats and EPSF. It has intelligent guidelines that help reduce font-construction mistakes, and it offers automatic help in maintaining stroke weight and symmetry. Its auto-trace tool can speed up the conversion of bit-mapped images into font outlines.

A key feature is FRed's ability to generate "hints" that provide high-quality printing on 300-dot-per-inch (dpi) PostScript laser printers. This could enable users to add hints to other PostScript-clone fonts, such as those from Bitstream and Compugraphic. FRed Font Machine's fonts aren't encrypted, so you can create logos and other special effects in type-manipulation programs like Broderbund's TypeStyler.

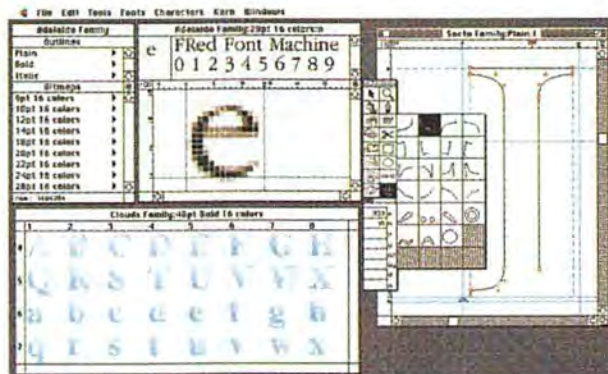
FRed also makes bit-mapped (screen) fonts, in black-and-white or color, and it will automatically anti-alias (dejav) gray-scale fonts. Its quick-access parts library can help maintain consistency in serifs, accents, and other font aspects, and your changes to a library part are reflected throughout the entire font. Multiple levels of undo/redo crown this impressive font tool kit. Letraset USA has acquired the marketing rights for FRed, which will be renamed and released later this year. Contact Letraset, 40 Eisenhower Drive, Paramus, NJ 07653; (201) 845-6100.

■ Salvatore Parascandolo

### Font Wars: ATF Weighs In

Yet another typeface heavyweight has decided to go a few rounds in the already-crowded PostScript font market. But Kingsley/ATF isn't just another brash challenger for Adobe's crown. American Type Foundry (ATF) is the oldest type foundry in the United States, originator of such faces as Century Schoolbook, Franklin Gothic, Stymie, and Americana. Now the company is bringing part of its 20,000-face library to the electronic desktop as ATF ProType.

ProType fonts will work with all PostScript-compatible printers, including the clones. They come with two utility programs that let you adjust the kerning pairs and generate high-quality, bit-mapped screen fonts of any size. Each ProType font can also be rendered in 3-D,



FRed Font Machine creates PostScript-clone fonts that can be installed in your System and downloaded to any PostScript printer. The fonts can be black-and-white, gray-scale, or color, and FRed even generates "hints" for better printing at low resolutions.



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something not possible with other PostScript fonts. The first ProType package (\$195), containing three decorative fonts plus one border, was expected to have shipped in March. ATF plans to release 40 more fonts by the end of 1989, with prices ranging from \$95 for a single font to \$285 for a package of six.

The ProType faces are created with a

proprietary font-scaling algorithm that uses "hints" to compensate visually for size changes. ATF claims that this will better maintain the type's original design, avoiding the unbalanced appearance of fonts that are scaled proportionally (that is, obtaining a larger size by merely doubling a smaller one).

ATF Type Foundry, a commercial version of this digitization program, will be available in June for \$449. It allows designers to trace freehand or to use scanned TIFF images as templates; tracing is done using Bezier curves, straight lines, and arcs.

Type Foundry includes all the tools necessary to create bit-mapped screen fonts, installable PostScript printer fonts, and kerned-pair tables, including an automatic bit-map generator and font editor. Additional modules, priced at \$150, let you output the fonts in other formats, such as DOS.

The knockout blow may be ATF Typographer, a multiuser layout and text-handling program also scheduled for release in June. ATF claims it will be the fastest, most precise layout program available, meeting the requirements of professional typesetters. Its most impressive feature is that the column a text entry is in and the text itself are treated as separate entities; this means you can edit a story at the same time that the designer is working on the article's layout.

Typographer enables you to have more than one style in a paragraph, and a Repeat key lets you quickly apply the same format to different sections of a document. Everything can be moved, stretched, rotated, or sized to within 0.001 of a point or degree. Typographer also offers a galley mode for viewing columns of text, hyphenation and justification routines that consider overall page appearance, justification with hanging punctuation, line and word counts, a spelling checker, search-and-replace capability, and support for EPSF graphics.

For details on these products, contact Kingsley/ATF Type Corp., 2559-2 E. Broadway, Tucson, AZ 85716; (800) 289-8973 or (602) 325-5884.

■ Aileen Abernathy

■ Aileen Abernathy

**Color Separations with PageMaker 3.01**

As we explained in the March DTP section, you can produce four-color separations of a PageMaker page using Adobe Separator. However, be sure that all process colors used in your PageMaker document are created outside the program. PageMaker 3.01's color capabilities should be used only for desktop presentations and for page proofs, because its colors cannot be separated using Adobe Separator.

To produce four-color separations of a PageMaker page, you must create your color graphics using Adobe Illustrator or FreeHand and then import them into PageMaker as EPSF documents through the Place command. Don't be alarmed if Illustrator documents appear as gray patterns in PageMaker while FreeHand's graphics are in color. Both will separate perfectly, as we detailed in the original article. However, it's best not to combine FreeHand and Illustrator graphics on the same page, since it requires additional PostScript steps.

PageMaker's new Color Extension, which should be available by now, simplifies the color-separation process (see DTP section, May '89). It enables PageMaker to do color separations on objects created within the program as well as on imported EPSF files. It also provides some support for color TIFF files.

■ Aileen Abernathy



## BETWEEN THE LINES

### Clippings

**Agfa Matrix:** Agfa Matrix is marketing the first Adobe PostScript film recorder, which can create 35mm slides from Illustrator images and other PostScript graphics. Unlike some other recorders, the Agfa unit poses no special font limitations, operating like any other Chooser-selectable PostScript device. No name or pricing information was available at press time for the unit, which should ship early this summer. Contact Agfa Matrix, Computer Graphics Business Unit, 1 Ramland Road, Orangeburg, NY 10962; (914) 365-0910.

**Cliptures:** Dream Maker has shipped Volume 2 of Cliptures, its business-oriented EPSF clip-art package. The more than 200 illustrations are in Illustrator format and can be modified in either Illustrator or FreeHand. For those who like to catalog their art, Volume 2 contains thumbnail sketches and keywords compatible with Curator. Contact Dream Maker Software, 4020 Paige St., Los Angeles, CA 90031; (213) 221-6436.

**ArtClips:** ArtClips is the successor to Olduvai's Post-ART line of clip art. ArtClips contains editable EPSF illustrations, symbols, and clip art plus an Art-Symbol laser font and a HyperCard stack of design tips. The \$99 package is available from Olduvai Corp., 7520 Red Road, Suite A, South Miami, FL 33143; (305) 665-4665.

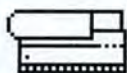
Olduvai's ArtClips includes "art gallery" EPSF illustrations (of animals, vehicles, people, and such) that are more detailed than standard clip art.



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*The AGFA Focus S800 GS: The 1989 MacUser Best New Input Device*

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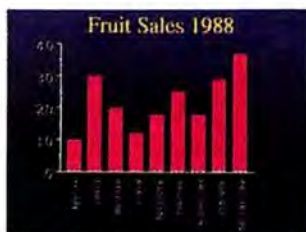
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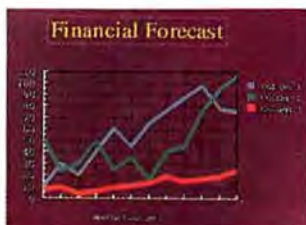
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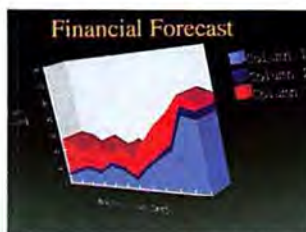
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*Photos can sometimes mysteriously appear in the wrong positions, on the wrong pages, or at low resolution. Here's how to minimize switcheroos.*

# Foiling Photo Faux Pas

For most desktop-publishing projects, laser printing is quite adequate, but photos don't reproduce very well on laser printers. The economical choice is usually to produce a camera-ready layout with all the text in place, and then have the printer physically insert, or *strip in*, a negative of a halftone, a photographically screened version of the photo. (The person at the press shop who does this is called the *stripper*.)

Because the process involves assembly, it's mistake-prone. You can prevent some photo-handling errors by providing the printer with a reference copy, or *dummy*, of the finished pages to use as a guide. In your reference layout, place scanned or photocopied versions of your photos in their correct positions on the page(s). Scanned photos can be placed during electronic layout, but you'll have to paste in photocopies physically after printing out the dummy pages.

## Scaling and Cropping

Chances are you'll need to alter the size of an image to fit the layout. When you reduce or enlarge (scale) an image with a page-layout program, you must scale it proportionately, without stretching or squashing the image. Otherwise, the stripper will not be able to duplicate the effect photographically.

Holding down the Shift key as you resize a graphic ensures proportionality. Some programs let you scale the image by entering a specific percentage. To calculate that percentage manually, use the program's rulers and a proportion wheel (available from any art store) or use one of the calculator desk accessories. Just divide the scaled length of a side by the original length of that side and multiply the result by 100.

You may also want to crop the image. After you've fine-tuned your on-screen

cropping, you must physically make crop marks on (or near) the actual photo. Draw crop marks outside the photo's edges with a grease pencil, or mount the photo on art board or paper and put marks on the art board with thin red or black ink. Crop-mark your original photos exactly as you electronically cropped their scanned versions earlier.

Since the stripper is going to cut a hole in your camera-ready layout to insert the halftone negatives, you should provide a clear cutting guide. If you don't have a scanned image to use as a placeholder, you can use a *keyline* — basically a box drawn on the layout with your program's rectangle tool. Make this box exactly the size the actual image will be after cropping and scaling.

Keylines can be nonprinting placeholders, or they can serve as frames for the printed artwork. It's up to you. Many publications use *hairline rules* — boxes with very thin lines — around their published photos. PageMaker and some other programs offer a hairline line-width choice; choose a line width that works best for you. You can even draw a framing box around scanned artwork that you've placed on the page.


If you do use boxes in the reference layout, you can still produce placeholder images. Simply copy the photos, using a copier that offers reducing and enlarging, and then crop each photocopy to show its final appearance in the layout. Attach the photocopies to the layout pages in their intended positions.

## One for the Stripper

You've drawn the keylines and placed scanned images or pasted in copies of the photos. But you're not done yet. You should always include art instructions on the reference layout. If you've used a keyline, type the instructions inside the

box. For a scanned image, draw a white-filled rectangle on top of the image and type your remarks there. For a photocopy, write on a strip of white tape.

Start with FPO (for position only), followed by a unique image identifier, such as the page number and a letter (for example, FPO 2A for the first photo on page 2), followed by the scaling percentage. Annotate the real photos with the same information as their surrogates, but without the FPO.

Now you can save the publication as *camera ready*, and again under another name for the stripper's reference copy. The scanned or photocopied images in the reference copy unmistakably show content and placement. Finally, always compare your reference pages to the printer's *blue-line* proof pages before the presses start rolling. If mistakes do occur in stripping, you can correct them after looking at a proof of the pages — your last chance to make corrections before the press run. 

**Providing a dummy of the finished pages prevents photo-handling errors.**



**By Tony Bove and Cheryl Rhodes**



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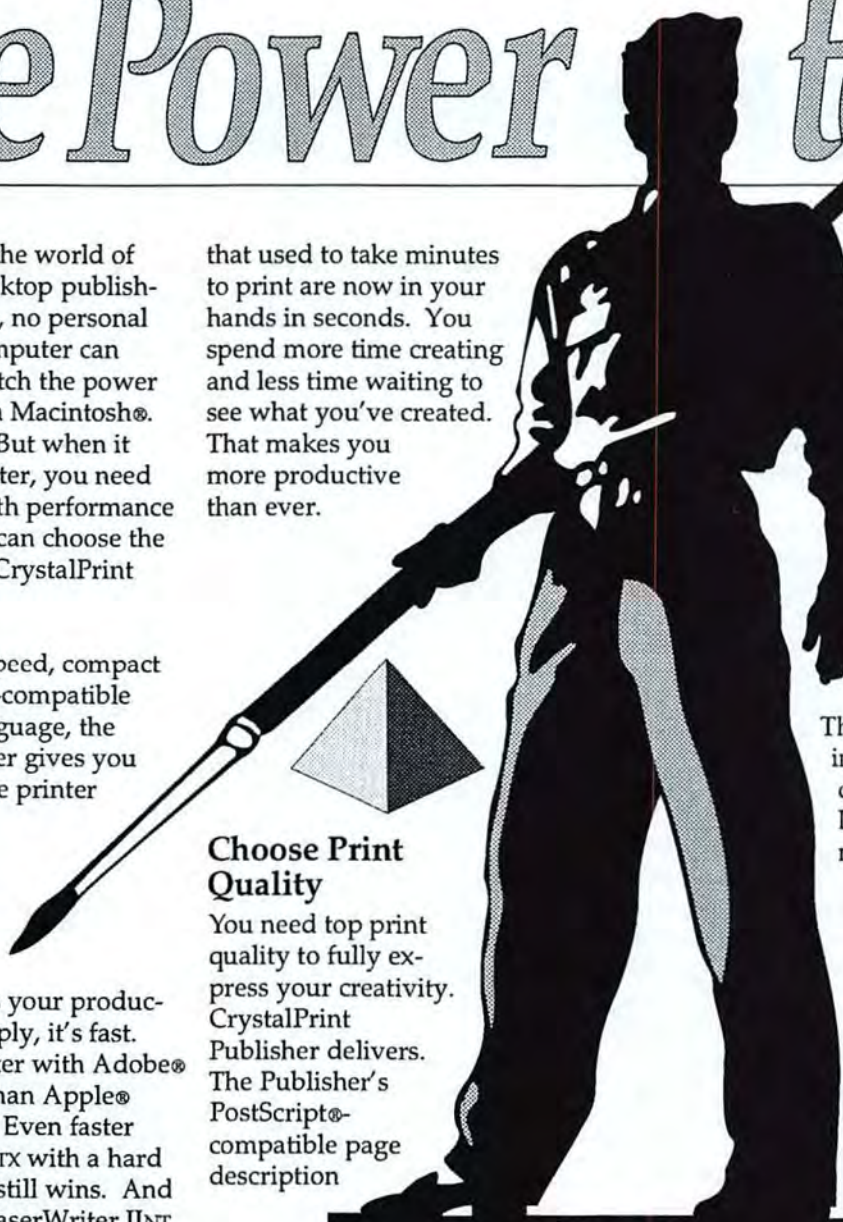
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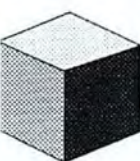


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MacUser gave WetPaint 5 mice (Sept. 1987) saying "...the WetPaint art is almost a must for clip-art users; the ArtRoundup desk accessory is a necessity." Volumes marked with \* were previously released as part of the award winning "MacMemories" series.

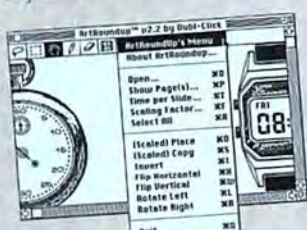


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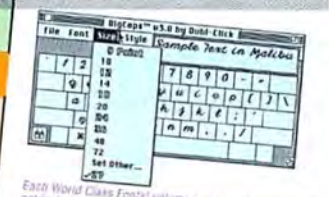
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## Ready,Set,Go! 4.5

A major advantage of Ready,Set,Go! has always been its ease of use. It incorporates some of the best features of the competition, such as a frame orientation (QuarkXPress) and master pages (PageMaker), without acquiring their complexity. Add to that its fast and powerful word processor, custom style sheets, and ability to wrap text automatically around graphics, and you can easily see why this page-layout program is ideal for writing newsletters "on the fly."

If you liked version 4.0 (see "Fourth Time's a Charm," February '88), you're going to love version 4.5. If you've never used Ready,Set,Go!, now's the time to check it out. The great word processor remains—including hyphenation, search and replace, a spelling checker, glossaries, and style sheets—and with its new ability to import or export tagged text, Ready,Set,Go! is better than ever. Version 4.5 also offers more precise typographic control, thumbnail views that can be manipulated on-screen or printed, and the ability to apply user-defined or Pantone Matching System (PMS) colors to text or graphics.

Ready,Set,Go! retains formatting for Word, MacWrite, and WriteNow files. Version 4.5 goes a step further, letting you automatically format imported plain text (ASCII) files via the Tagged Text feature. While in your word processor, simply put the name of the appropriate

Ready,Set,Go! style sheet <enclosed, like this, in angle brackets> in front of the text you want formatted. When you place the text in Ready,Set,Go!, the program automatically applies the fonts, point sizes, indents, and paragraph and word spacing specified in the style sheet.

Thus you can easily bring formatted text in from any word-processing program, including those on PCs and workstations. If you select Smart Quotes when placing text, Ready,Set,Go! converts the punctuation commonly used in word processing to the styles used in typesetting—such as replacing two hyphens with an em dash and changing straight quotation marks to curly ones.

If you criticized Ready,Set,Go! 4.0's ability to kern and change letterspacing only in increments of 1 point, you'll be impressed with version 4.5's new typographic capabilities. It can do tracking (removing space between all characters in a text block), kerning (adjusting space between individual letter pairs), or letterspacing (adding space between letter pairs) in increments of 0.001 em. Ready,Set,Go!'s use of the em—a unit of measure equal to the type size—matches typesetting terminology, unlike PageMaker 3.01's percentages. You can also specify any type size from 1 to 327 points, in increments of 0.01 point.

One reason PageMaker users haven't liked Ready,Set,Go! in the past is that it didn't have pull-down guides for aligning text and graphics. I've always felt that Ready,Set,Go!'s precise specification sheets make this option unnecessary. Nevertheless, by popular demand, version 4.5 has pull-down guides—plus spec sheets—plus grids. When you activate the guides, you deactivate the grids, and vice versa.

Version 4.5 can also align text vertically within a text block. You can align the text with the top or bottom of the block, center it, justify it with feathering (distributing excess vertical space evenly among all lines in a text block), or justify

it with paragraphs (distributing space evenly among paragraph breaks).

Ready,Set,Go! 4.5 is the first major page-layout program to offer thumbnail views of documents. You can view all the pages of your publication at once in a scrollable window. Even better, you can add, delete, print, or rearrange the order of pages. Anyone who has muttered about the difficulty of swapping pages in other programs (including Ready,Set,Go! 4.0) will love this option.

Version 4.5 has other nice touches.



### Ready,Set,Go!

4.5

1 1/2

**List Price:** \$495; upgrade from version 4.0, \$49.95; upgrade from earlier versions, \$85.

**Published by:** Letraset USA, 40 Eisenhower Drive, Paramus, NJ 07653; (800) 634-3463; (201) 845-6100.

**Version:** 4.5

**Requires:** 1 megabyte of RAM; 4 megabytes and a hard disk recommended.

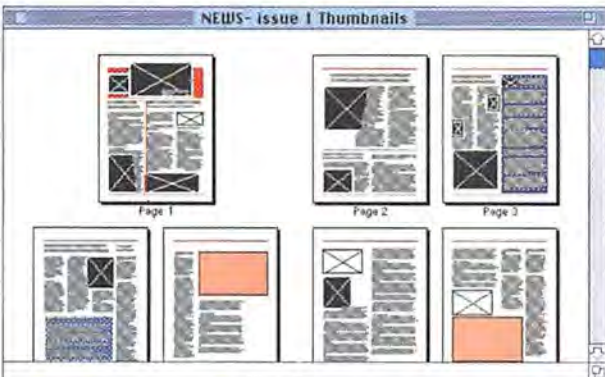
**Compatibility:** Mac II and Multi-Finder friendly.

**Application Size:** 509K for program; 220K for dictionaries and hyphenation file.

**Copy Protection:** None

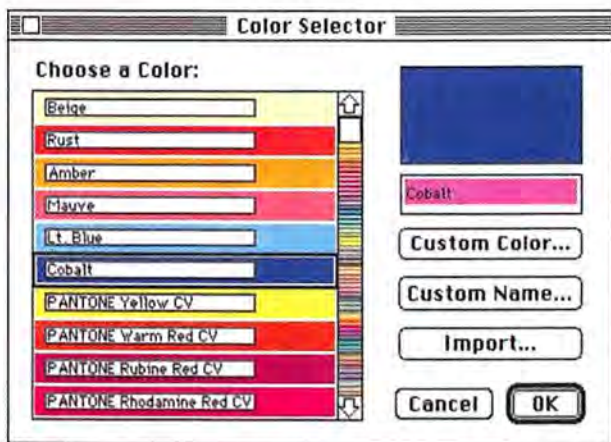
You can change most of the default settings to meet your needs. Case Conversion lets you change text to all caps, all lowercase, or caps for the first word or sentence. (Unfortunately, small caps aren't an option.) When you cut an object from one page and paste it onto another, the pasted object appears in exactly the same position it occupied on the original page—no moving it into position as you have to in PageMaker or QuarkXPress.

A few of the keyboard commands have been changed to fit the PageMaker/Word standard. Thus, if you're familiar with these programs, you know that to bold-face text you press Command-Shift-B. Ready,Set,Go! users who are used to pressing just Command-B may be an-



Ready,Set,Go! 4.5's thumbnails let you see your entire document at a glance and make it easy to add, delete, print, or change the order of pages.





Ready,Set,Go! 4.5 has finally added color to its repertoire, although only spot color. The standard palette contains 20 customizable colors plus the entire Pantone series.

noyed at having to learn the new key combinations.

On the graphics front, Ready,Set,Go! can import Paint, PICT, EPSF, and TIFF files. With version 4.5 you can customize gray-scale TIFF and RIFF images, adjusting the brightness and contrast and creating special effects such as flops, negatives, and posterization. To accommodate the massive memory requirements of these images, Ready,Set,Go! uses virtual memory, which conserves RAM by keeping only part of the image information in memory. The rest is stored on disk, for access when needed.

With Ready,Set,Go! 4.5 you can add color to your handiwork, but it's spot color only — no process colors or four-color separations here. You can also import PICT2 and color EPSF and TIFF files, which display in color on-screen. Color can be applied to objects, text, fill

patterns, and borders. The standard palette contains 20 colors plus the entire Pantone series. You can customize any of the 20 default colors, except white and black, by altering the percentages of red, green, and blue (on a Plus or SE) or via the Color Picker (on a Mac II). Once you've customized the palette, you can import it to any Ready,Set,Go! document, where it replaces the default palette. (Be sure to import the pal-

ette before you start assigning colors, since existing colors will change to match those of the imported palette.)

Ready,Set,Go!'s most significant new feature may be its ability to store font information with each document. Each Ready,Set,Go! file contains all the font names (instead of ID numbers), character widths, and kerning-pair tables required to print the document on any PostScript printer. This means that users who send their files to service bureaus for output no longer have to worry about font ID-number conflicts that result in swapped fonts and uneven spacing.

Finished documents can be output to any PostScript color printer, high-resolution typesetter, laser printer, or ImageWriter. The program can print spot-color separations and registration marks, although a quick survey of five Chicago-area printers showed that none felt that

spot separations would greatly reduce cost or even speed up the production process. Because Ready,Set,Go! relies on Apple's printer driver, it still can't bleed off the page when printing to a Linotronic typesetter.

Ready,Set,Go! is still the only major page-layout program that doesn't require a hard disk, although it's highly recommended, especially if you want to use the hyphenation and dictionary files. The initial release of Ready,Set,Go! 4.5, which I used for this review, had a serious speed problem when importing large text files and TIFF and RIFF images. Letraset claims to have fixed the problem and is providing a free upgrade to 4.5a for registered owners. I looked at a prerelease version of 4.5a, and it still performs much faster on a Mac II or an enhanced SE or Plus with at least 4 megabytes of RAM. Without the additional memory, the program is a bit sluggish.

Ready,Set,Go! does have a few quirks. Be sure the RAM cache on your Control Panel is turned off; otherwise, your data files may be corrupted. If you use multiple monitors, make the larger one your startup screen to avoid being stuck with windows the size of the smaller screen.

The program comes with two manuals, the 4.0 manual plus a supplement for version 4.5. They are somewhat skimpy, and you have to go back and forth between them to get all the information on a particular topic.

Despite these minor annoyances, Ready,Set,Go! 4.5 is a welcome upgrade that keeps the competition between page-layout programs too close to call.

■ Mike Nikolich

## KeyCap Fonts

If you've ever written an explanation of how to use a Mac program, you know there's no easy or consistent way of indicating keystrokes and commands. Some people use capital letters, others prefer small caps, and still others insist on a distinctive font. Paperback Software is trying to bring order to the confused world of Macademia with KeyCap Fonts, a package of three PostScript-compatible

fonts designed specifically for computer documentation.

The Ovals typeface has characters for all the named keys on an Apple extended keyboard. Each name is enclosed in an appropriately sized oval, and the actual text is a sans-serif font similar to Helvetica. Ovals, like the other KeyCap fonts, comes in sizes of 10, 12, 14, 18, and 24 points. The text is slightly smaller than the nominal point size, so that when the ovals are added, the result mixes smoothly with other fonts of the same point size.

The Graphic font makes it surprisingly easy to create boxes, lines, and borders. The characters emulate most of the extra characters of the IBM ASCII extended character set, plus a few other useful shapes. The original characters are typically for creating the boxes and lines in many PC programs.

In the Macintosh environment, Graphic is most useful for creating assorted lines and quick-and-dirty borders, often boxing text and graphics more accurately than the main application can. Graphic



lets you make microadjustments, and using it is not nearly as complicated as writing about it. The manual and disk have numerous examples that help make things clear.

KeyCap's third font, Gray, contains only 12 characters — ten gray rectangles of increasing densities, and two fixed spaces. The lighter tints are especially useful for creating write-in boxes on forms or documents, or for adding emphasis to text. By following the manual's clear directions, you can even create large gray areas without the need for a separate

graphics program.

All three fonts come in both bit-mapped (screen) and PostScript (printer) versions. You should install the screen fonts, although you need the automatically downloading printer fonts only if you're using a PostScript-based printer.

The screen fonts are installed in the usual way, with Font/DA Mover or font-enabling software like Suitcase II. You install printer fonts by dragging them into your System folder. Downloading Key-Cap Fonts is simple, since the package includes Altsys' Download utility. If your printer requires the Adobe Font Metrics, the appropriate files are included.

The manual appears to be a revision of the IBM version. That's not to say it's bad; it's just that there's an emphasis on how to create fake PC screens. But the basic instructions are clear and well presented, and the manual provides a wealth of useful tips for using KeyCap Fonts with

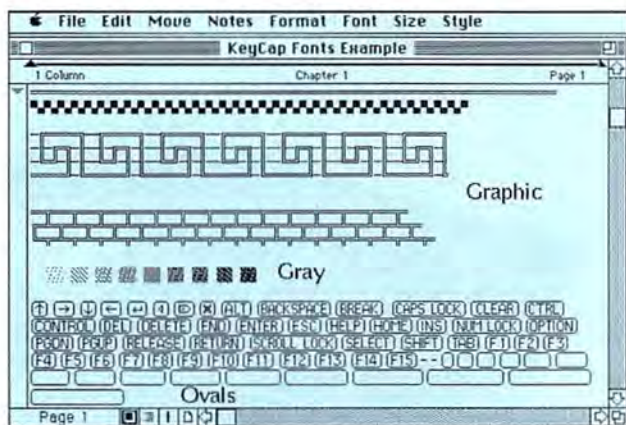
Macintosh applications.

The only additions I'd like to see are screen fonts in 30- and 36-point sizes. As

is, these fonts print superbly on the ImageWriter and ImageWriter II, but the ImageWriter LQ requires a reduced triple-size font for best results.

KeyCap Fonts will be most useful and cost-effective in desktop-publishing shops; casual users may have trouble justifying the price. Nevertheless, Key-Cap Fonts is thoroughly professional work and should be in the font library of everyone who does even a page of documentation. Your readers will appreciate the results.

■ Steven Bobker



This FullWrite document shows how the KeyCap Fonts appear on-screen. The Graphic examples contain some easily created combinations. The entire Ovals font is shown, along with 9 of the 12 Gray characters (missing in action are a black rectangle and two fixed spaces).

**KeyCap Fonts**

**List Price:** \$149.95  
**Published by:** Paperback Software International, 2830 Ninth St., Berkeley, CA 94710; (415) 644-2116.  
**Version:** 1.0  
**Requires:** Any Mac and a printer.  
**Compatibility:** Mac II and Multi-Finder friendly.  
**Application Size:** 46K for full sets of screen and printer fonts; 8K for downloading application.  
**Copy Protection:** None

## LetrTuck

One hallmark of high-quality commercial typesetting is kerning, a technique for adjusting letterspacing to improve the appearance and readability of text. For instance, the letters *To* look and read better if the *o* is tucked under the *T*. Most Macintosh fonts come with some predefined kerned pairs, which are stored in a special table in the FOND resource and automatically applied whenever the font is used. Some programs let you adjust letterspacing manually, which can be useful in touching up a headline, for example. If you don't like a font's kerned pairs, however, and you want to add or modify kerned pairs globally, you're out of luck.

Enter LetrTuck, a nifty little program

from EDCO Services that lets you directly alter the kerned-pair information in a font's FOND resource. You can add, delete, or modify up to 2,000 kerned pairs per font. The changes are permanent and will be used automatically for both screen and printer versions of the font.

You can customize any font that is installed in your System or is available through a program like Suitcase. Be sure to back up your System before you begin because the program alters the System file. The process is simple: Select the font and style — each style (bold, italic, and so on) has a separate kerned-pair table — and LetrTuck will show the kerned pairs that already exist. When you select a pair, a dialog box displays the letters in 12 and 72 points along with

their current kerning value. You change the kerning value either by sliding a scroll bar to the left (tighter) or right (looser) or by typing in the value directly. Changes are reflected instantly in the two-letter samples. Adding a new kerned pair is as simple as specifying the letters and adjusting their spacing. To delete a pair, select it and use the Delete command.

When you kern a letter pair, you're actually changing the system of units used to measure the spacing between characters. LetrTuck's default is 72 units to the em, but you can choose increments ranging from 10 to 2,000 units per em. (An em space is as many points wide as the font is high.) When installing the new kerning values in the FOND resource, LetrTuck translates them into the 1,000-unit system used by PostScript.



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# the Macs.

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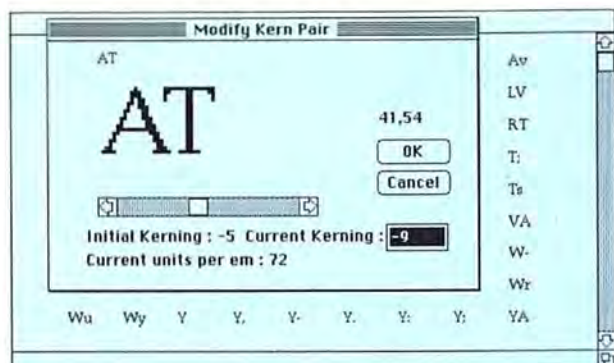
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**NEC**





Desktop publishers with a perfectionist streak will love LetrTuck, the first Mac program that lets you add, delete, or modify kerned pairs in the System fonts.

Kerning values may be difficult to understand at first, and the manual — despite good intentions — is of little help. Don't worry about calculating how much actual space needs to be closed up between a pair. Just keep in mind that kerning values are proportional to point size; judge your kerning efforts visually using the 12- and 72-point samples.

It's a good idea to print a sample of any pairs you've added or modified to see how they look on paper. LetrTuck will print five sizes of the selected pair and all other pairs that begin with the same character. Once you're satisfied, you can save the kerning table back to the original font or apply it to another font or style. This could be useful if your fonts are similar enough, but generally you'll want to have different tables for each font. LetrTuck

also lets you save the kerning table as a text file.

LetrTuck does provide a quick and easy way of adjusting kerned-pair tables, but some of its features are inelegant, confusing, and even a little buggy. For instance, the program won't store kerning values entered from the keyboard. It

also stubbornly refuses to print samples of any pair beginning with an apostrophe. More importantly, LetrTuck does not work with MultiFinder. The program crashed when we tried to save the kerning table, and the font we altered was subsequently inaccessible from LetrTuck or any other program and had to be reinstalled.

LetrTuck calls its font menu a Family menu, but if you install a style-specific screen font like B Palatino Bold, it will be listed separately from the rest of the Palatino family. What's more, the Family menu isn't sorted alphabetically, so if you have a lot of fonts, be prepared to spend time searching for the one you want.

There's no way to see all the kerning values for a table at once, so you can't easily compare values. This is too bad, because many predefined pairs have a value of zero (no kerning) and could eas-

ily be deleted to save space in a crowded System. If you add a kerned pair and then change your mind, clicking Cancel should do the trick. But instead, the program adds the pair with a kerning value of zero, unnecessarily cluttering the kerning table.

Finally, the manual is generally clear and well presented, but it serves the dual purpose of documenting both the Macintosh and PC versions of LetrTuck. In some sections — most notably the discussion of the unit system — information on both versions is presented jointly, making it difficult to decipher which information is relevant to the Macintosh. In short, LetrTuck is a useful utility for the serious desktop publisher, but the program itself could stand a little more tightening.

■ David Lester



## LetrTuck

\$\$\$1/2

List Price: \$149

Published by: EDCO Services,  
12410 N. Dale Mabry Highway,  
Tampa, FL 33618; (800) 523-  
8973, (813) 962-7800.

Version: 1.04

Requires: Mac 512KE or later.

Compatibility: Mac II friendly;  
problems with MultiFinder.

Application Size: 21K

Copy Protection: None

## UltraSpec

Copy fitting is one of the most troublesome chores for anyone involved in publishing. Publication Technologies has attempted to take some of the guesswork out of this necessary evil with UltraSpec, a HyperCard-based application that specs copy and creates dummy pages. The program calculates character, word, and line counts, and projects available space. UltraSpec can then use this information to produce complete printer specifications and detailed blue-line layouts.

When you start a publication with UltraSpec, the first step is to rename the

application with the name of the proposed publication. Thus, each publication you spec and prepare dummy pages for is, in effect, a copy of the original UltraSpec program. Most such copies will take up about 300K of disk space, so a hard disk is desirable.

The opening screen is striking and well designed with seven buttons that walk you through the spec process step by step. Once you've specified all the publication parameters — measurement system, typeface, point size, leading, margins, page size, columns, gutters, and number of pages — you can pull in stories and assign space for advertisements.

UltraSpec is not a page-layout pro-

gram, so text is never displayed. Instead, UltraSpec scans text files, determining paragraph, word, and character counts so it can draw appropriately sized blocks on dummy pages. (If your stories aren't finished yet, you can estimate the counts instead.)

In performing its copy-fitting calculations, the program uses these figures plus a built-in database of characters-per-pica for various fonts, including some (but not all) of the LaserWriter Plus fonts. You can add data for other fonts, but you'll have to provide the characters-per-pica information.

UltraSpec also lets you assign space for graphics and headlines, which are



# DESKTOP REVIEWS

treated as graphics rather than as text. However, you must know beforehand the amount of space needed for headlines. A considerable amount of preprinting and measuring of elements like headlines and captions is de rigueur.

Once this preliminary work is done, you get down to the nitty-gritty of layout. You place a page element by numerically indicating the location and size of the text or graphic block, and UltraSpec then draws the block in a noninteractive page mock-up.

Each element — headline, graphic, text, or ad — appears on-screen with codes denoting story number, part, physical starting position on the page, and

length. All elements can be edited after initial placement.

Once you've placed all the publication's elements, UltraSpec can print dummy pages. The printed dummies are considerably more informative than those displayed on-screen. A header contains information about margins, leading, page size, and so on, and the various story elements are more clearly described. My only complaint is that the printed dummies come out reduced by about 18 percent of actual size. I assume this was done to allow room for the header, but I'd prefer the header on a separate page and the dummy at actual size.

Make sure you've chosen a printer before you enter UltraSpec, because the HyperCard Apple menu is generally not accessible while the program is running. But if you forget, there's an undocumented workaround. Hit Command-space bar, and the HyperCard menu bar will appear, allowing you access to the Chooser. To make it disappear, hit Command-space bar again.

Although UltraSpec shows some promise, its shortcomings are legion. Unbelievably, you can specify only one font, point size, and leading amount per publication. There's no easy way to incorporate drop caps into the copy-fitting calculations. Graphics must span whole columns, so odd-sized graphics are verboten. Only one master page is definable, and you can't set up gutter margins for facing pages.

UltraSpec comes with one 800K floppy disk, a 49-page manual, and a brief learning cassette. The manual lacks an index and table of con-



## UltraSpec

⌘⌘1/2

**List Price:** \$129.95  
**Published by:** SoftStream,  
 19 White Chapel Drive,  
 Mount Laurel, NJ 08054; (609)  
 866-1187.  
**Version:** 1.0  
**Requires:** 1 megabyte of RAM,  
 System 5.0 or later, HyperCard; 2  
 megabytes or more of RAM and  
 hard disk highly recommended.  
**Compatibility:** Mac II and  
 MultiFinder friendly.  
**Application Size:** 273K  
**Copy Protection:** None

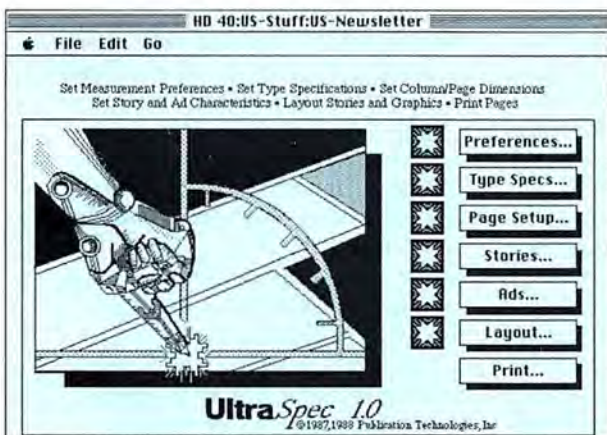
tents, and the examples don't have sufficient detail.

The audio cassette is essentially a rehash of the manual. Occasionally it is even misleading. For example, it instructs you to click the OK button, although the button is clearly labeled *Accept* on the screen.

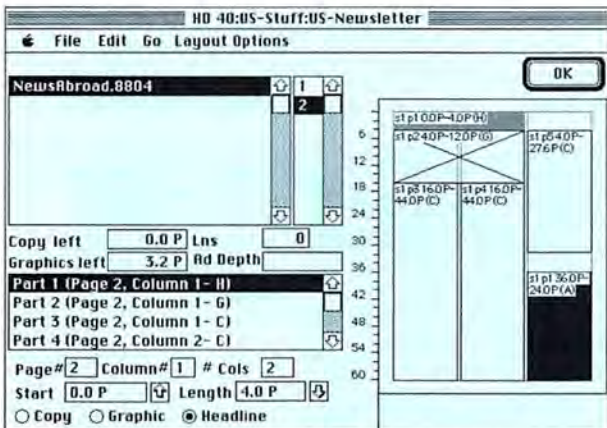
Finally, the manual says UltraSpec will run on 1-megabyte machines, but take my advice: don't even think about it. My attempts to use that configuration produced an interminably slow and quirky program that would tax the patience of Job. Do yourself a favor and consider UltraSpec only if you have at least 2 megabytes of RAM. I also had some screen refresh problems from time to time, even on the Mac II.

This is neither a great program nor a bad one. But I suspect that most people will find UltraSpec ultrahard and ultimately unnecessary. Desktop publishers will probably prefer to continue pattering around in their favorite page-layout program, which can handle copy fitting almost as well without all the restrictions UltraSpec imposes. UltraSpec might make sense for traditional graphic designers or production departments, but the limitations it imposes on the creative process and on some aspects of design diminish its value.

■ Gregory Wasson



Desktop publishers can take the guesswork out of copy fitting with UltraSpec, a HyperCard-based program that performs the necessary calculations for you and then creates dummy pages.



In UltraSpec's Layout window, you assign space for previously specced stories and graphic elements on dummy pages.



# HYPER SPACE

In April we stated that we wouldn't review 101 Scripts and Buttons until a legal problem regarding copyright infringement was resolved. Robertson Reed Smith's material has been removed from the package, and at this time he's taking no further action. So here's the promised review. Last month Mike Swaine claimed that HyperCard is the "Universal Interface" and should be used as a front end to almost anything, from mainframe databases to multimedia productions. This month, in defense, he brings us XCMDs and XFCNs.

If you have HyperCard tips you'd like to share, send them to  
Hyperspace,  
c/o MacUser,  
950 Tower Lane,  
18th floor,  
Foster City, CA  
94404.

EDITED BY LAURA JOHNSON

## 101 Scripts and Buttons

I get a queasy feeling when I see a sign in a restaurant window that says, "All you can eat for \$5.99." That's also the feeling I get from a software package called 101 Scripts and Buttons for HyperCard (from Individual Software).

At \$69.95, the stack costs a good deal more than the salad/soup/pasta bar at Sizzler. On the plus side, you can explore the 101 offerings without putting your gastrointestinal tract in jeopardy. For me, the stack was a bit heartier than the Sizzler soups.

The manual's introduction tells you that the program name is fallacious — the actual count of objects exceeds 1,000. These items are categorized with eight main menu buttons. Pressing any of them pulls down a menu that lists the scripts and buttons relevant to each category.

The category names — Controls, Data Entry, Graphics, Resources, Sound, Text, Utilities, and XCMDs — do not accurately reflect their contents, however, nor are their contents mutually exclusive. For example, the Radio Buttons item appears in three different categories. This stack would be better represented if the main menu simply said: Hey, this stack has 67 cards, each card offers one or more neat gizmos, and here's a go-to list of the card names.

The focus of many of the most useful items in the stack is on interface

enhancements. An elaborate animation recorder lets you create pathways by storing the coordinates of objects you drag. A Sticky Notes button automatically creates a pop-up field with its own close box, zoom box, and title bar. There's a Draw Rectangle external function that lets you pick up objects and move them around. Array, Table, and Grid Builders create spreadsheet-like series of buttons and fields after asking you to fill in the object's dimensions.

The stack contains a handful of interesting script examples plus a selection of animated icon and cursor scripts much like those offered in the public-domain libraries.

Other scripts let you create Hot Fields that allow mouse-downs on text to simulate mouse-downs on buttons, examples of time and date functions, and an elementary music-construction set. Fifteen XCMDs and XFCNs provide fast special effects, such as zooming rectangles and card flipping, as well as pop-up menus and menu bars. It's a shame that the source code to these XCMDs was not included, considering the dearth of this kind of educational material.

Utility stacks such as 101 Scripts and Buttons are targeted at serious HyperTalk scripters, not fledgling stack authors. That's unfortunate, since one of the best ways to learn advanced techniques is through example. But, beginners learning the fundamentals of HyperCard will find the tricks and techniques more frustrating than functional. You can't productively copy and paste a button into your own stack without some under-

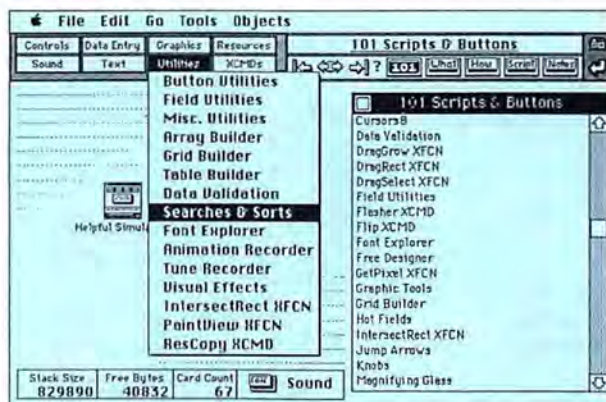


Figure 1: 101 Scripts and Buttons uses pull-down menus to provide help information on its stack structure and to help you navigate.



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standing of the script behind it.

For example, the product packaging says the stack offers buttons to allow searching and sorting within a field. Now, I just happened to have a 300-item field in a stack of my own that needed sorting. Without stopping first at the manual, I double-clicked on the stack and found the main navigation screen. This card had more than 20 buttons but nothing named Search or Sort. So I went to the manual and looked in the table of contents (there is no index). Yes, there was a heading on searches and sorts, but the text didn't say where in the stack it was located, so I went back to the stack and began pressing buttons. I discovered a pull-down menu called Text that led to the Search and Sort card.

The Search and Sort card contained a sample field to demonstrate the search and sort buttons. I tried copying the Sort button from the company's stack into mine, but the sorting code didn't reside in the button script. The button contained only a handler caller and some timing statements.

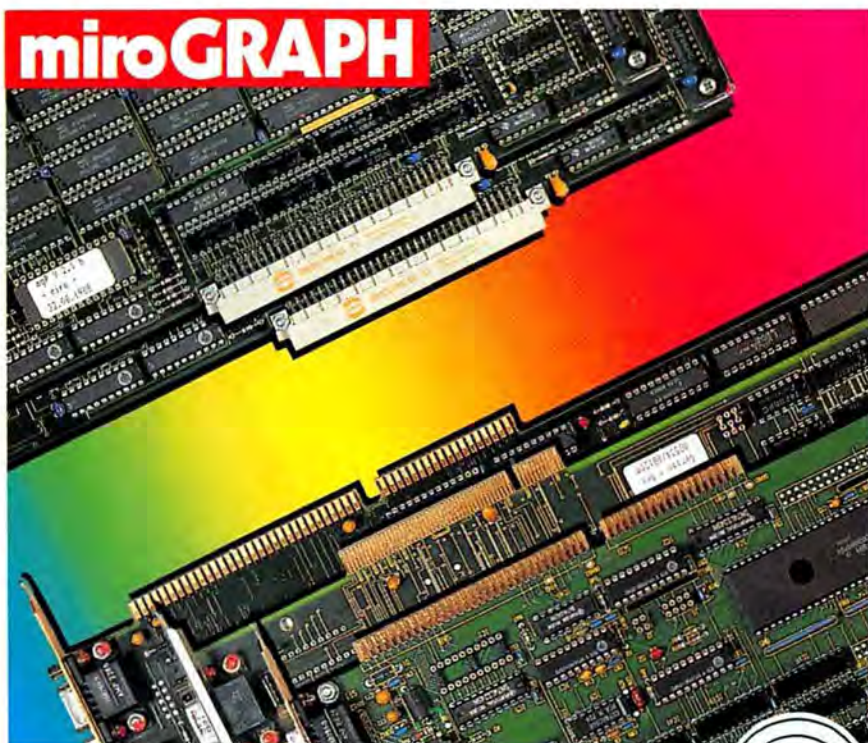
I could have gone looking for the sorting handler, but instead I decided to copy the field from my stack into Individual Software's sample field. I pressed the Sort button and then waited 25 minutes for the sort to be

performed. Finally, I copied my sorted field back into my stack. In the end, I accomplished my task but without the luxury of having the Sort button in my own stack.

The design of 101 Scripts and Buttons is cluttered and sometimes ugly,

yet the coding shows professionalism and punch. Also, the pop-up help fields and an adequate manual give this stack an edge on the public-domain programs offering similar script techniques.

— Carrie Moss



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### 101 Scripts and Buttons for HyperCard

5 5 5 1/2



List Price: \$69.95

Published by: Individual Software, Inc., 125 Shoreway Road, Suite 3000, San Carlos, CA 94070-2704; (800) 331-3313; in CA, (415) 595-8855.

Version: 1.1

Requires: 1 megabyte (2 megabytes recommended), hard disk, HyperCard.

Compatibility: Mac Plus and later.

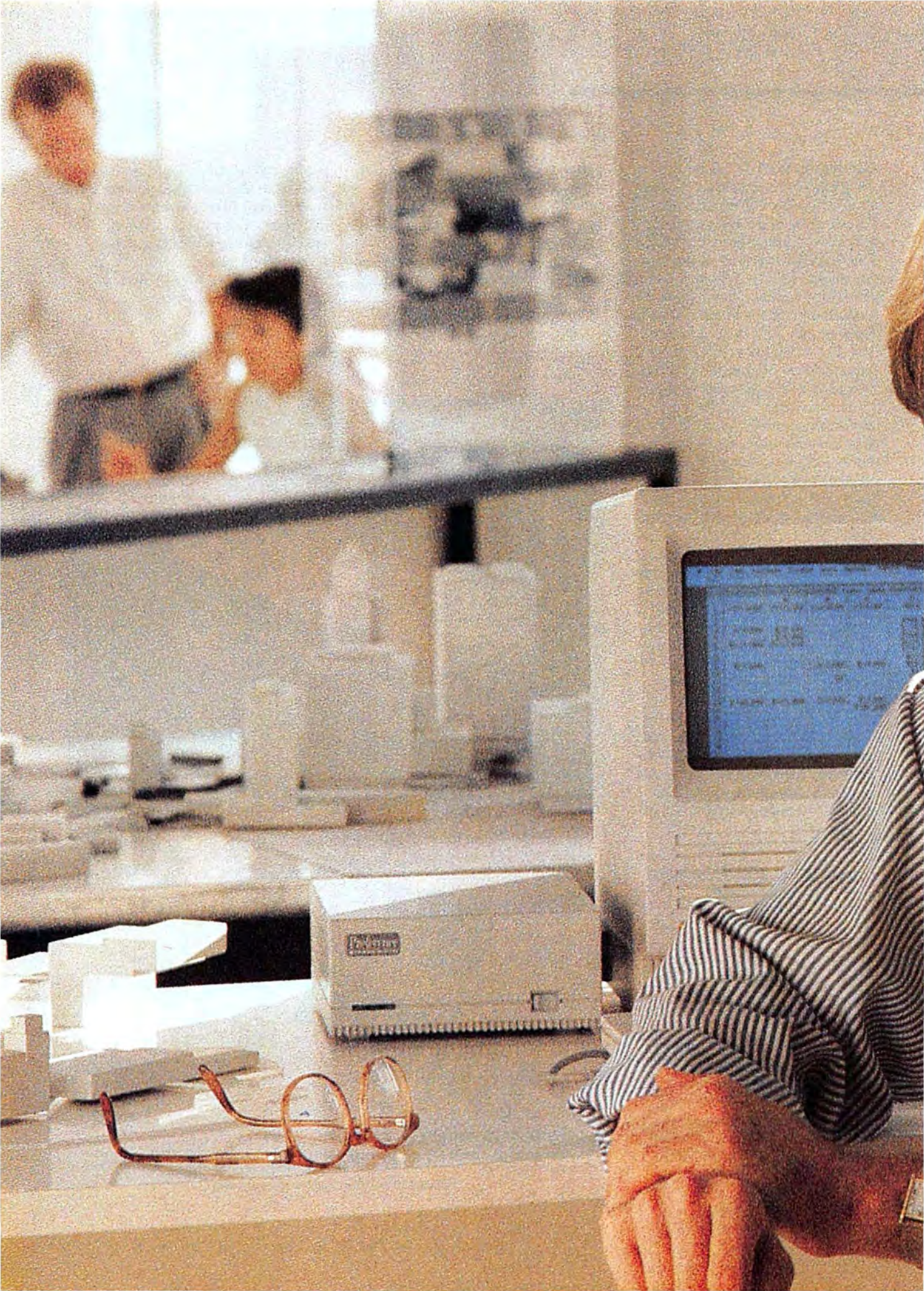
Application Size: 750K

Copy Protection: None

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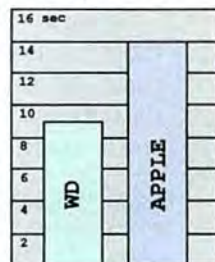
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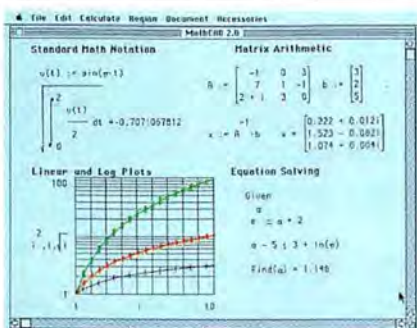


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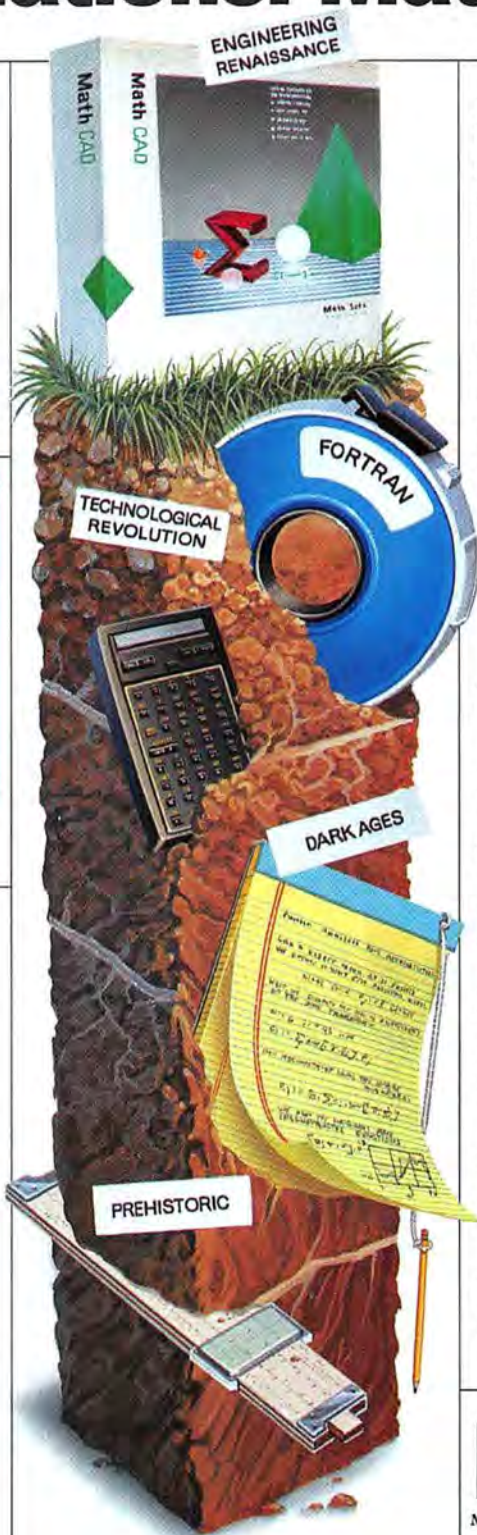


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Last month I waxed eloquent on the potential uses of HyperCard, calling it, among other things, The Universal Interface, The Multimedia Interface, and Bill Atkinson's Demo Program. I claimed that the HyperCard interface could be grafted onto just about anything, from mainframe databases to multimedia productions, and strongly implied that it should be.

Before John Dvorak throws a bucket of water on me, I suppose I should confess that HyperCard can't really do any of those things very well. Anyone trying to use HyperCard for the purposes I described quickly runs up against serious limitations in HyperCard and in its halfheartedly object-oriented programming language, HyperTalk.

What could I have been thinking of?

External commands and external functions — XCMDs and

every version of HyperCard. It's not part of the HyperTalk language, and you could remove it from your version of HyperCard if doing so served some purpose of your own.

External commands and functions are also useful for getting around limitations of HyperCard itself. HyperCard does not support full-screen, full-color pictures on a Mac II — an inherent irritation designed into the product, not just an annoying limitation of the HyperTalk language. But several XCMDs, starting with Color from Imaginetics Neovision, have grafted such

capabilities onto the product with, admittedly, varying degrees of cumbersomeness. However much this flashing and colorizing may brighten the HyperTalk programmer's life, the real value of external commands and functions is to HyperCard



## Inside Externality

XFCNs, for short — are what I was thinking of. This month I'll explain what these are and how they can be used, and are already being used, to turn HyperCard into all the wonderful things I described last month. I'll also list some good external commands and tell where to get them and how to use them.

HyperCard has just two virtues: a powerful and intuitive user-manipulable user interface and enormous extensibility. This extensibility (XBTY for short) is the ability to teach HyperCard new tricks. HyperTalk's author, Dan Winkler, built this XBTY into HyperTalk to allow programmers to add their own commands and functions to the language. These external extensions can be written in a real — er, in another — programming language yet are treated by HyperTalk as though they were part of its native HyperVocabulary. An XCMD acts like a HyperTalk command when used in scripts or typed into the message box, and an XFCN acts like a HyperTalk function.

This XBTY is of obvious value to programmers. Wherever a limitation of HyperTalk rears its head, you can write your way

around it in assembly language or C or Pascal or SNOBOL (well, maybe not SNOBOL) and incorporate the result into HyperTalk as an XCMD or XFCN. An example is the Flash XCMD. If you type Flash into the message box, the screen will flash. A naive user of HyperCard might conclude that Flash was a HyperTalk command, but in fact it is an XCMD, written by Dan Winkler and distributed with

users. An XCMD or XFCN may appear to users as a button on a stack, as a command to type into the message box, or as a more dispersed functionality in a stack. The most interesting XCMDs and XFCNs exploit the XBTY of HyperCard in one of the directions I mentioned last month.

Here are a few recent XMPLs that have crossed my desk.

Apple supplies a set of XCMDs and XFCNs for accessing AppleTalk networks: the HyperCard AppleTalk Toolkit version 2.5 is available from Apple's APDA division, as are the HyperCard Serial Communications Toolkit version 2.5 and the HyperCard VideoDisk Toolkit, for accessing, organizing, and controlling still images, motion sequences, and sounds recorded on videodisc (APDA, Apple Computer, Inc., 20525 Mariani Ave., Mail Stop 33G, Cupertino, CA 95014-6299).

Robert J. Beichner at the State University of New York at Buffalo (Center for Learning and Technology, Faculty of Educational Studies, 217 Christopher Baldy Hall, Buffalo, NY 14260; (716) 636-2110) is selling a set of graphing tools for computer-aided instruction for \$20. They are implemented as a HyperCard XCMD.

Zone I, Inc. (at 382 Nalley Drive, Suite 101, Stone Mountain, GA 30087) sells Hyper-XCall, which lets programmers tie FORTRAN routines into their scripts, and Hyper-XRemote, which drives the Kodak Datashow Remote (a wireless palm-size device for controlling presentations).

There are some good commercial products, but many useful external commands and functions are public-domain and shareware products. Finding these XCMDs and XFCNs can be a challenge. You have to watch the Mac magazines like a hawk. Significant new XCMDs and XFCNs may get only a passing mention at best in the general Mac press (I know I'm overlooking many excellent products in this column), and the HyperCard-specific publications may do only a little better. The best



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public-domain and shareware products will eventually find their way into the catalogs of the monster user groups, such as BMUG, 1442A Walnut St., Suite 153, Berkeley, CA 94709, and The Boston Computer Society, 1 Center Plaza, Boston, MA 02108.

But the best place to look is on-line, such as on CompuServe's MAUG forum, The Source, GENie, Delphi, or MacNET. Stuart Gitlow on MacNET is attempting to collect good XCMDs in addition to providing a forum for developers.

What you actually get when you buy or download an XCMD or XFCN is a HyperCard stack in which the command or function is installed. XCMDs and XFCNs are resources, as are fonts and icons, and resources normally reside in the portion of a file called the file's resource fork. More specifically, XCMDs and XFCNs are stack resources, so they live in the resource forks of stacks. With any luck at all, you'll find that the author of an XCMD or XFCN has supplied an Install button in the stack to facilitate installing the resource into the stack of your choice. If not, you can use the ResEdit utility (avail-

able from Apple) to raid the source stack's resource fork (see "Getting Externals Out"). This procedure is not as hard to do as it is to say. Writing your own XCMDs and XFCNs, on the other hand, is. There are two things you need to know: (1) what you can and can't do in the external code and (2) how to interface the external code with HyperCard. Neither can even be broached in a magazine column. If you're considering writing XCMDs and XFCNs, you should get Gary Bond's *XCMD's for HyperCard*, MIS Press, 1988. It covers the philosophy and practice of external development and includes source code in C and Pascal for many useful XCMDs and XFCNs. Two other good sources are the HyperCard Developer's Toolkit from APDA and *Using HyperCard: From Home to HyperTalk*, Tay Vaughan et al., Que, 1988. My own book, *Dr. Dobb's Essential HyperTalk Handbook*, M&T Books, CA, 1988, while excellent in all other respects, doesn't teach you how to write XCMDs and XFCNs. Maybe in the second edition. 

CARD

## Getting Externals Out

Sometimes the author of a HyperCard external command or function fails to provide any obvious means for installing it in your stack. The following general procedure allows you to copy any XCMD or XFCN from any stack to any other stack.

1. After making a note of the name of the stack with the XCMD (or XFCN) you want, find the ResEdit utility and double-click on its jack-in-the-box icon to invoke it.

2. ResEdit is now displaying a window for each disk it knows about, listing the files and folders. Double-click through the folders as necessary until you find the stack that contains the XCMD (or XFCN). When you find it, double-click on its icon to open it. Opening in this case means that you now see a scrolling window of resource types, cryptic four-letter designations such as ALRT and CURS indicating what types of resources the stack contains. (If instead you see a dialog box offering to create a resource fork for this file, you've got the wrong stack. The stack you're looking for already has a resource fork, containing, at least, the XCMD or XFCN you're after.)

3. Find the resource type you're after, either XCMD or XFCN. (Scroll to the bottom of the list.) Double-click on the word XCMD (or XFCN) to see the names of the XCMDs (or XFCNs) in this stack.

4. Copy the XCMD (or XFCN) you want. (Select it and type Command-C.)

5. Now locate and open the stack to which you want to copy the XCMD (or XFCN). (See step 2.) Copying it into your Home stack (or into the HyperCard application file itself) makes it available to all your stacks. (To be safe, always try out such modifications on a backup copy.)

6. Paste the XCMD (or XFCN) into this stack. (Type Command-V.)

7. Repeat steps 2 through 6 for each XCMD or XFCN you want to copy; then quit ResEdit, saving your changes. (ResEdit asks if you want to save your changes before quitting. You do.)

You can also copy all the XCMDs (or XFCNs) of a stack at once, memory permitting, by single-clicking rather than double-clicking on the word XCMD (or XFCN) in step 3 and then proceeding as above.



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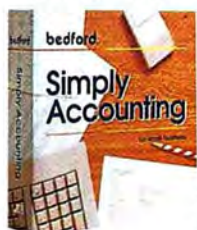
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# BRIDGES

Oracle for Macintosh finally began shipping in January. Although you can't just pull it off the shelf and go to work with it immediately, this new member of the Oracle product family provides a powerful development environment that will give Macs access to the billions of bytes of data stored in Oracle databases on computers large and small. David Beaver of the Automation Group offers a first look at what promises to be an important product.

Been waiting for Apple and DEC to finally live up to their Apple-DEC alliance promises? Or for CL/1 to ship? You may have to wait a little longer. Check out Currents to find out what's real and what's vapor. With all the hoopla about the Apple-DEC Computing Center at last year's DEXPO East, you might have expected some excitement a year later when the show returned to New York. Not so. But there were a few announcements worth noting.

Let us know what you think. Send your thoughts, tips, trials, and tribulations to Bridges.

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EDITED BY HENRY BORTMAN

## Alisa Systems

Alisa had a couple of significant announcements at DEXPO East, one for "real soon" and one in the "someday" category. First, the real-soon item: Alisa's TSSnet product, which provides Macs with DECnet connectivity, will be extended to support Macs on LocalTalk networks. The currently shipping version (1.3) requires each Mac connected to a DECnet network to have its own Ethernet card, an external Ethernet box, or an asynchronous connection. The new version (1.32), due out by the time you read this, will provide DECnet access to any Mac on a LocalTalk network.

The new TSSnet will let Macs make use of DECnet mail and file-transfer capabilities even without a connection to a VAX, although such a configuration is pretty unlikely. The main use of version 1.32 will be in conjunction with Kinetics' FastPath 4, to allow Macs on a LocalTalk network to connect to a VAX on Ethernet. Kinetics is working on a modification of its DECnet software, which downloads into FastPath 4, scheduled to be

ready at the same time as the new TSSnet.

TSSnet 1.32 will cost \$495 per Mac, the same as the current version, with free upgrades available to registered users who request them. For information about FastPath software upgrades, contact Kinetics, 2540 Camino Diablo Road, Walnut Creek, CA 94596; (800) 433-4608; (415) 947-0998 in California.

Alisa's "someday" announcement was that DEC has licensed AlisaTalk technology as the basis of its core software offering for Mac/VAX connectivity. DEC committed to providing VAX-based services for Mac/AppleTalk connections when it announced its alliance with Apple in January '88. Exactly what features the new DEC software package will offer remains a secret, as do the name, price, and delivery date of the product. Alisa's currently shipping AlisaTalk package includes AlisaShare, a VMS-based AppleShare file server compliant with AppleTalk Filing Protocols (AFP), along with print-server and terminal-emulation modules. You can reach Alisa Systems at 221 E. Walnut St., Suite 175, Pasadena, CA 91101; (818) 792-9474.

## Network Innovations' CL/1

In other DEXPO news, Network Innovations' CL/1 database connectivity language still hasn't shipped. That's news? You tell me. More precisely, what didn't ship was CL/1 server software, the part that goes on the mainframe where the database lives.

Apple is promoting CL/1 as the way for any Mac-based application to talk to practically any database anywhere. The initial release of CL/1 server software will be for VAX VMS. Although that is still not available, several companies added new products to the growing list of Mac applications that will support CL/1, most notably Odesta's GeoQuery and Neuron Data's Nexpert Object. Fairfield Software also announced a desk-accessory implementation of CL/1 called ClearAccess (see Figure 1). Unfortunately, until

the server software ships, all the front-end application support in the world won't do anyone any good. How long will we have to wait? Network Innovations has stopped making predictions (but offered June as a target). Contact Network Innovations, 20863 Stevens Creek Blvd., Cupertino, CA 95014; (408) 257-6800.



Figure 1: ClearAccess, from Fairfield Software, provides CL/1 capability in a desk accessory. Here it is being used to access information from an Informix database on a VAX; that information has been pasted into an Excel spreadsheet.



## LaCie

At the Macworld Expo in San Francisco last January, LaCie announced SilverPlatter, a software package that enables a modem, printer, or other serial device attached to a Mac to be shared by other Macs on the network, as if it were a

LocalTalk device. Shared devices appear in, and can be selected from, the Chooser. It's like a Shiva NetSerial implemented in software, but instead of using specialized hardware in an external box, SilverPlatter uses the Mac's CPU to perform its AppleTalk magic. So what? NetSerial costs \$399; SilverPlatter, \$99.95. It should

be available by the time you read this. Contact LaCie, 16285 S.W. 85th St., Suite 306, Tigard, OR 97224; (800) 999-0143.

## VXM Technologies

VXM began shipping its TIM session layer software for TCP/IP, now available for the Mac, as well as on DOS machines, VAXes, Suns, Apollos, and mainframes. Without TIM, distributed applications must use remote procedure calls (RPCs). When one machine makes a remote procedure request of another machine, the called machine must stop what it's doing to service the remote request. If that machine is tracking the movement of a user's mouse, the user will experience a jumpy screen response.

TIM gives priority to user-initiated actions over remote ones, which results in smoother response. TIM also allows a bidirectional flow of data between machines. With RPCs, only one side can talk at a time.

As we went to press, VXM Technologies also announced that it will be providing TIM functionality in HyperCard XCMD form. Look for other developers to incorporate TIM features into their applications soon.

Pre-HyperCard TIM costs \$365. The version with HyperCard XCMDs, to be released in April, costs \$395. Registered owners of the older version can upgrade for the difference, and site licensing is available. Contact VXM Technologies, P.O. Box 9121, Kenmore Station, Boston, MA 02215-9121; (800) 627-5221.

## DMA

Also new to networking is Dynamic Microprocessor Associates' (DMA's) pcMACTERM, which is now called pcMACTERM/NETWORK. Previous versions of pcMACTERM allowed a Mac to control a PC via a direct connection. The network version (\$395) provides the same capability for Macs and PCs connected on a LocalTalk network. The PC must, of course, have a LocalTalk card installed. Contact Dynamic Microprocessor Associates, 60 E. 42nd St., Suite 1100, New York, NY 10165; (212) 687-7115.

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## BRIDGES

## A/UXILIARY INFO

# Apple Revamps A/UX

**Release 1.1, Apple's first major update to A/UX, adds better Toolbox support, tape backup, and more.**

**A**pple's initial A/UX release last year was a solid AT&T System V Release 2 UNIX with significant BSD 4.2 enhancements. Unfortunately, support for native Macintosh applications was minimal. Under A/UX 1.0, a user could, in theory, launch a Macintosh application by using a utility to copy the application from a Mac floppy disk to an A/UX disk, and then using A/UX's launch facility to run the program. Very few Mac programs would launch successfully, though, partly because A/UX support for the Mac Toolbox was weak.

Announced at January's Macworld Expo, Release 1.1 is Apple's first major update to A/UX and was expected to have shipped in March.

Toolbox support has been much improved. The biggest enhancements are support for Color and Desk Accessories. LocalTalk network printing is now possible, although additional hardware (such as a SuperMac CommCard) is required, and there is still no support for dedicated printers connected through the serial port. The Sound Manager is not supported, nor is there any progress in Release 1.1 toward integrating the Macintosh Finder with A/UX.

What all this means is that most "32-bit clean" Mac applications should now run under A/UX. HyperCard version 1.2.2 will be A/UX compatible. Claris has already announced that its newest releases—MacWrite II, MacProject II and MacDraw II version 1.1—will run under A/UX. Microsoft has also committed to

support A/UX in its Mac software.

System performance has been improved in the new release, and Apple's tape and CD-ROM drives are now supported. The *tar* and *cpio* backup programs will work with the Apple drive, allowing it to be used for backup as well as for software distribution. Additionally, the incremental backup programs *dumps* and *restore*, omitted from A/UX 1.0, are now included.

A/UX 1.1 supports draft 12 of the Institute for Electronics Engineers (IEEE) POSIX standard for portable UNIX applications. Compliance is required for the federal government market, a market that Apple is pursuing aggressively.

Somewhat independent of A/UX 1.1, Apple is shipping X-Window, release 11, version 3, both client and server software. X-Window, developed at MIT, is an industry-standard distributed windowing environment. X should run under either A/UX 1.0 or 1.1 and will cost \$329.

Apple Computer has acquired the rights to distribute StarNine's HFX copy utility (from the excellent StarNine Utilities for A/UX, reviewed in the February '89 *MacUser*) with A/UX 1.1. HFX simplifies the task of copying files between Mac and A/UX disks.

Apple is now selling its A/UX bundle for \$8,352, which includes a Macintosh IIx (without monitor) with 4 megabytes of memory and A/UX on an 80-megabyte hard disk. A/UX alone is available for \$2,282 on an external 80-megabyte disk, for \$2,182 on an internal 80-megabyte disk, or for \$695 on tape. Manuals are sold separately. Updates are available for owners of A/UX 1.0. Contact Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014; (408) 996-1010.

**By James Finn**



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# Oracle

## The Future of Mac-to-Mainframe Connectivity?

**Oracle is a major player in PC and mainframe databases. Teamed with HyperCard, it may be the database-connectivity solution everyone's been waiting for.**

**N**ever trust a computer you can't lift," Steve Jobs used to say.

The world has sure changed since then. After years of poking fun at mainframes, we've come to realize that big computers — with their processing horsepower, gigabyte hard disks, and nightly backup — aren't so bad after all. We've also realized that the mainframe in the basement holds a lot of valuable data. The hot mini-computer topic of 1989 is corporate data — we want to get to it, download it, analyze it, and print it on LaserWriters rather than greenbar printout paper. But most importantly, we want to do it all with the ease of use of the Macintosh.

Oracle Corp. is a major player in this arena, as a large share of the world's corporate data is managed by Structured Query Language (SQL) software from Oracle and other vendors (see sidebar, "A Look at SQL"). Versions of Oracle's database-management system are available for nearly every brand of mainframe and minicomputer, and more than 20,000

Oracle systems are in use in more than 5,000 corporations worldwide. Oracle's announcement last year of a database-development tool for a Macintosh front end therefore created quite a stir among management information system (MIS) professionals.

Oracle for Macintosh is now available, and although it's not the ideal product for every Mac-to-mainframe need, it is an excellent development system for Macintosh owners who already have Oracle's products for larger computers. Oracle is a significant product for the Macintosh industry, as it points the direction for future Mac-to-mainframe connections by setting a standard that other mainframe players may imitate.

### The Delphi of Oracle

Oracle for Macintosh is a tough product to pigeonhole. The manuals call it a "Navigator Through Corporate Data," but that describes what you can do with it, not what it is.

A conventional mainframe database application consists of three functional modules: user interface, program logic, and calls to a database engine. The program logic, the real guts of the application, handles results of the user-interface segment, feeding commands to the database engine that add, change, or read records from the database (see Figure 1).

Oracle moves two of these three functions down to the Macintosh: the user interface and the program logic. The Oracle database engine on the host responds to commands just as it did before, but the commands now can come directly from the Macintosh.

At its core, Oracle is a package of tools with which Macintosh programs can access data on a variety of host computers across a variety of networks. The data can be from an Oracle system or from DB2 or SQL/DS, two systems for IBM mainframes that compete with Oracle's. You can develop and test these programs on your own Macintosh without bothering the host and then point your application to the live databases for production work.

The optional networking version supports AppleTalk, Ethernet, and asynchronous protocols, allowing connections to virtually any VAX, UNIX computer, or other host that can connect to AppleTalk. Modules scheduled for later this year will give better support to IBM mainframes, with systems network architecture (SNA), MacIRMA 3270, and MacAPPC protocols.

With this wide range of connection features, an Oracle application can do something quite remarkable: display data from a variety of databases, spread across a variety of computers, on one screen. Until now any such communication required a large amount of complex custom software. This feature is one of the strongest aspects of Oracle, and it goes a long way toward fulfilling Apple's vision of seamless integration among a variety of hardware.

Some examples of possible Oracle applications are beginning to appear (see Figure 2). These include an executive information system that allows corporate users to see important summary data — daily sales, for example — with a few mouse clicks, or an offline data-entry system that handles the user interface and data validation on a local Macintosh, uploading data in an efficient burst of transactions. We might someday see an

**By David Beaver and John Rizzo**



Oracle system that would let salespeople in the field with laptop Macintoshes receive that day's sales leads from the mainframe in a local Macintosh database and transmit orders at day's end.

You can use a Mac as an SQL server, but it can handle only one user at a time, so it's appropriate only for one-person development and testing and not as a Macintosh-only database environment. Multiuser Oracle servers require a true multitasking operating system such as VMS or UNIX, and the current Macintosh operating system doesn't have the required features. Oracle does not support A/UX at this time. So until it does, or

until Apple comes out with its multiuser operating system, you won't be able to use a Mac as a multiuser Oracle server.

Nonetheless, the Mac version of the SQL server kernel is quite an impressive feat of programming. It's fully compatible with all mainframe Oracle products, and it supports sophisticated interprocess communication with the front-end software on the Mac, yet it fits in a special memory segment of only 400K (the rest of the minimum 2 megabytes of RAM is used by the front-end software).

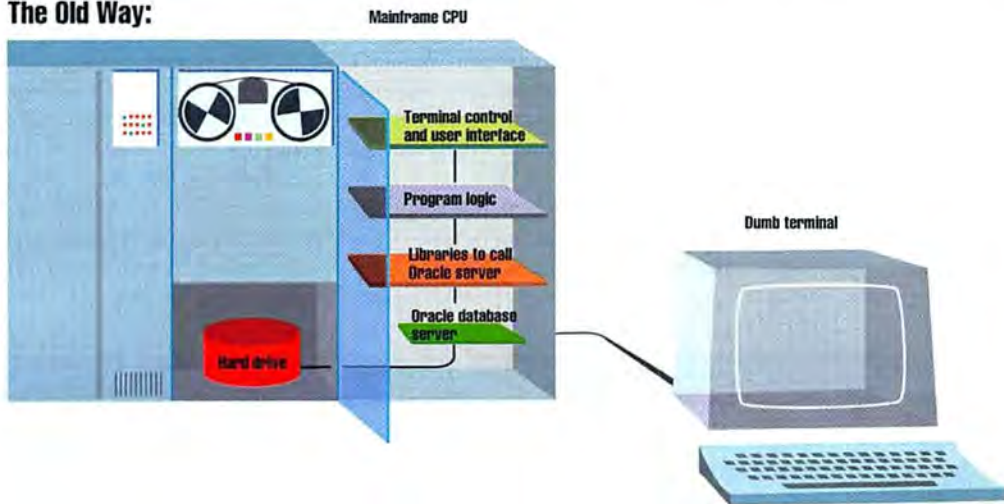
## A Hyper-Oracle Front End

Oracle is marketed as a development

system and includes several tools intended to take the pain out of database development. Rather than offering a new development language for these applications, Oracle supports a variety of Macintosh programming languages. The most significant of these tools are written in HyperCard and exemplify the kind of "intelligent" programs that can be written to a conventional mainframe database. At this writing, Oracle databases can also be accessed from programs written in 4th Dimension and Macintosh Programmers' Workshop C, and Oracle Corp. intends to support others.

Each of these languages can access

### The Old Way:



### The Mac Oracle Way:

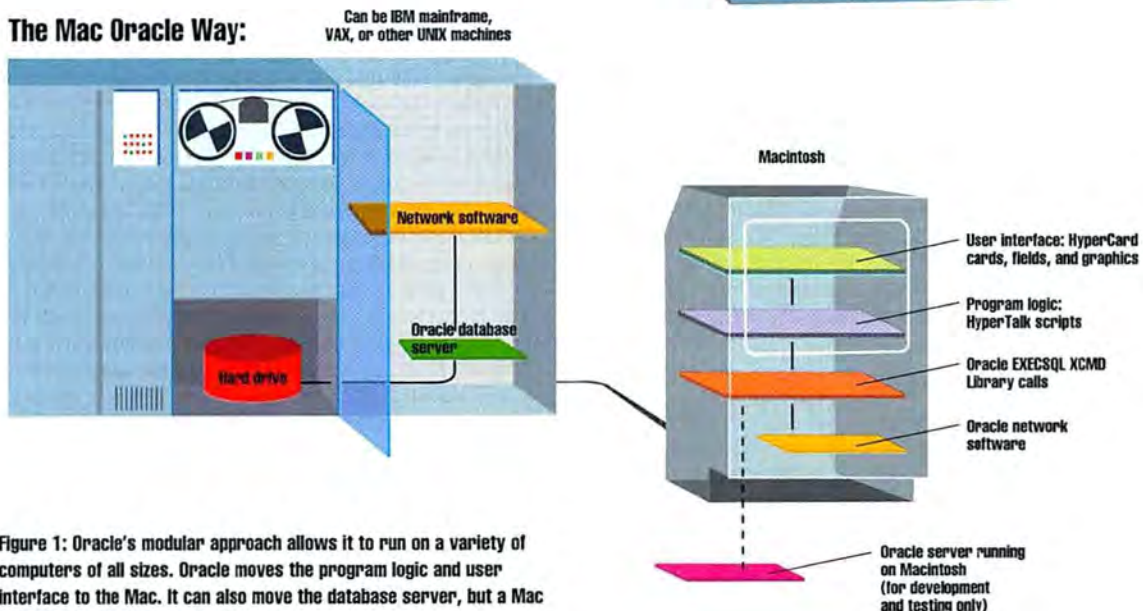


Figure 1: Oracle's modular approach allows it to run on a variety of computers of all sizes. Oracle moves the program logic and user interface to the Mac. It can also move the database server, but a Mac server accommodates only one user.



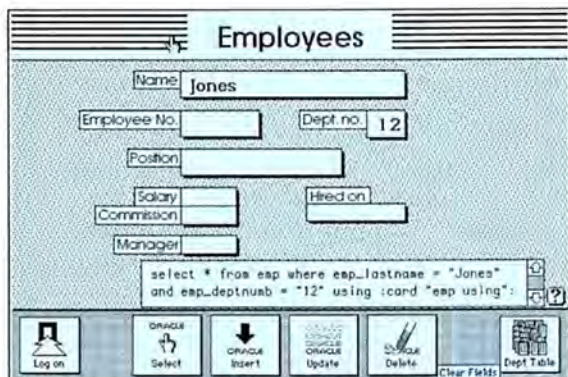


Figure 2: This HyperCard screen is from Oracle's Employees demo stack. To find all employees named Jones in department 12, the user clicks on the Select button after filling in the name and department number. The pop-up field contains the SQL database command that was built by HyperTalk in response to the Select button.

received from the host. A better database is 4th Dimension, but it lacks HyperCard's graphic tools and the ability to build a new data file on the fly to handle an unusual user request. Developing in HyperCard or 4th Dimension is easier than writing C programs, but the programs run much more slowly.

### Stacking Up Oracle

For nonprogrammers, Oracle has a built-in application generator that can create, with just a few keystrokes, a skeletal HyperCard stack with screens to match a database structure. A system-management stack puts a friendly HyperCard interface on many routine database operations such as maintaining user and password files and creating new data structures. An errors stack provides full error descriptions to Oracle's numeric error codes. On the other hand, the HyperCard stacks that are intended for programmers are all nice, but they are sorely lacking in features and do not qualify as serious development tools. They are teasers for what can be done with the product, rather than real applications.

XCMDs, small external programs that perform specific functions and are a key part of the Oracle package. With Oracle's XCMDs attached, a HyperCard stack can build a database command from input from a HyperCard button, send this command to any connected Oracle database, and handle the resulting data just like any other HyperCard data, with the benefit of graphics, animation, or sounds.

This approach certainly makes Oracle accessible to a wide range of Macintosh programmers, but these languages are the weak link in the Oracle chain. For an

example, turn to Oracle's manuals: "HyperCard's printing utility is limited and most Hyper\*SQL designers will not use these capabilities, preferring other reporting methods (such as C programs attached as XCMDs) instead." We don't imagine many programmers thinking, "Gee, that sounds easy; I think I'll just whip up a quick report in C while my popcorn's cooking."

None of the three supported languages is perfect. HyperCard is flexible but is missing some important database features that would be useful for storing data

## A Look at SQL

A key to Oracle's success in the mainframe database market is its use of SQL, or Structured Query Language, which is now used by about 25 percent of that market.

IBM researchers designed SQL to be a standard language for accessing data, independent of hardware platform or specific software implementation. (Oracle first implemented SQL in 1979.) Programs written to use SQL can be moved from one environment (say, a VAX running Sybase) to another (such as an IBM mainframe running DB2) quickly and with little modification, so users can move between machines without retraining.

Most significantly, SQL is not a programming language, like BASIC or Pascal, with a distinct series of program lines. All SQL commands are phrased in single sentences that begin with a key command verb. For example, a user's request from a database to see the first and last names of all people who live in California can be phrased in SQL as

```
SELECT FIRSTNAME, LASTNAME FROM PEOPLE
WHERE STATE = "CA"
```

SQL also supports relational-database queries that link several flat data files (known as *tables*), which permits complex database searches across multiple tables without straying from the basic format of SQL command statements. For example, a more complex database might have one table of people and another table of companies, a person's record that contains only the name of that person's company, and a company record holding the company's name and full address. An SQL command that searches data across these two tables to list, for

example, all people who work for a company in California may look like this:

```
SELECT FIRSTNAME, LASTNAME FROM PEOPLE
WHERE COMP_NAME = (SELECT COMP_NAME
FROM COMPANIES WHERE STATE = "CA")
```

All SQL commands are built up out of core phrases in this way. To display these people in alphabetical order by last name, you would only need to add the phrase `ORDER BY LASTNAME` to the command. SQL commands are normally used from within other development languages, since the language provides the structured programming logic while SQL provides the database access. Oracle for Macintosh uses HyperTalk and other languages in the same way, using the HyperTalk script to build a standard SQL command from the user's input and send it to the remote Oracle database. Here's an example of Oracle's use of HyperCard from the Four Winds Hotels demo stack. Clicking on a button to get information on the San Francisco hotel calls a script that includes this command:

```
execsql "select count(*) into :line 2
of card field HDB1:"
&& "from rooms_ " & CityPrefix &&
"where occupied <> 'Y' with :theCursor;"
```

The command sent to the server by the XCMD would look like:

```
SELECT COUNT(*) FROM ROOMS_SF
WHERE OCCUPIED <> 'Y'
```

This command returns the number of unoccupied rooms in San Francisco into Card Field HDB1.



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# BRIDGES



Figure 3: This HyperCard screen is from Oracle's Four Winds Hotels demo stack. The user has just clicked on the San Francisco button, which displays current booking information for that hotel.

The errors stack, for example, is useful for programmers, but any application for real users would need much better error handling. (Can you say "taciml.tacalb: reusable block not of type KBKDELE"? ) There are also other error-handling problems. For example, if you're adding a record to a database and have data-entry errors in more than one field, Oracle returns only one error code for the entire record, and that code doesn't indicate which field caused the error. You have to guess at the mistake and try changing data. Once you've guessed right and fixed the mistake, you get the error message on the next bad field. This situation is frustrating, to say the least. A solid application needs to do all possible error checking itself as soon as data is entered.

The system stack is also weak. It allows only specification of field name, length, and data type. All data-validation parameters, such as Not Null, Unique, Indexed, and so on must be added later from a command line. The applications generated are extremely simplistic, and the weak report-writing module (which doesn't have a HyperCard interface) and data-loader utility (which does) both bomb under certain not-unusual circumstances.

Oracle with a HyperCard front end is better suited for developing small utility programs that work in conjunction with mainframe database systems. Oracle does fit into HyperCard nicely, and the manuals provide good examples of SQL commands and their use in HyperTalk. For example, developing an executive information system in HyperCard often involves no more than a few button scripts that read, "When the user presses this button, send this database command to

the host computer and display the results in this field." A few of these scripts and some nice graphics can result in an easy-to-use system for quick snapshots of corporate data.

## Inside Oracle

Oracle users are tied to minicomputers or mainframes, and this version of the program promises to liberate them from their dependence on dumb terminals and complex command-line environments. For instance, it would be a real breakthrough for MIS programmers to be able to remove COBOL from their mainframes and do all application development on a Macintosh, using the host as a passive data server. Unfortunately, Oracle for the Mac can't yet do this.

In the ideal intelligent-terminal environment, the user-interface function should be on a Macintosh. Big computers are good at processing lots of data quickly, and Macintoshes are good at being friendly. Menus, data input and validation, and graphics are best handled on the Mac, and Oracle's environment provides well for these functions.

But with the development languages available today, the program logic of a large system doesn't belong on the Macintosh. It's just too slow. Unless you want to write your application in C, which is impractical in most MIS shops, you're back to HyperCard or 4th Dimension as your language. And even in times of heavy use, a compiled COBOL program on the host runs faster than a HyperCard script on a Macintosh.

Oracle's Four Winds Hotels demo (included with the package) highlights this issue very nicely (see Figure 3). As



# FEATURE PORT

we've outlined, Oracle with HyperCard can support a nice system that gives a quick snapshot of occupancy rates in hotels across the nation. A room-service system might even be a good Oracle application. But we wouldn't use Oracle on Macintoshes to write the high-volume reservation system that our hotel depends on. The complex logic and multiple database actions for deciding which empty rooms to fill first, or how to reassign other reservations to make room for a long stay, beg for tools more powerful than HyperCard or 4th Dimension.

A large Oracle system — and really any Mac-to-mainframe application — faces many other difficulties that should be seriously weighed, as some of them don't come to light until a system reaches final testing. For example, fixing bugs is easy when the program code is in one place on a host computer, but updating 50 Macintoshes with the latest version of a program is less fun. HyperCard in particular causes problems here, since user stacks may contain data, such as user preferences and log-in names, and must be replaced carefully. Future Mac-to-mainframe products will need the ability to update workstation software from the host.


Despite the demand for user-friendly intelligent terminals, there is a speed penalty. A dumb terminal can display ten records from a database search very quickly, but if you're loading those same ten records into a Macintosh program and displaying them in nice fonts, it'll take several seconds longer. You can always replace your Mac Pluses with fast Macintoshes, but that'll cost several thousand dollars more for each terminal.

## The Future of Oracle

The world wants a lot out of a Mac-to-mainframe connection product, and we don't want to see people try to make Oracle something it's not. Since it's the first product of its type, Oracle is bound to take the heat from users who learn these lessons the hard way and sink resources into development projects that are bound to fail for one reason or another.

Make no mistake, though: Oracle is a well-designed product and, if used prop-

erly, can be a powerful tool. The HyperCard and 4th Dimension XCMDs and the various communication-software pieces are solid programs that fit nicely into the Macintosh environment, but HyperCard's weaknesses must also be considered. HyperCard is frustrating in a multiperson development effort, and serious development tools (such as debuggers) still were not available at press time (although TMON was expected to release HyperTMON any day). HyperTalk is certainly easier to use than COBOL, but it's tempting to get caught up in designing award-winning graphics and icons. The stacks that are shipped with Oracle are an excellent example of this: they look great but are missing some important user-interface features. The fact remains that a programmer can, with just an hour's training, create a database on a host with a simple Macintosh interface in three minutes — honest. With better tools, this ability could change the entire complexion of mainframe database development.

With a little more effort, one Macintosh screen can transparently display data from many different host computers with one click of a mouse, and this is where Oracle's claim to be a "Navigator Through Corporate Data" really defines its potential. Oracle may not be perfect now, but for a first-generation product it's pretty impressive. I'm confident that a few years from now most of our criticisms will have been resolved. 

**David Beaver is president of The Automation Group, a Macintosh consulting firm in San Francisco and was Steve Jobs' personal assistant during the Macintosh development era. John Rizzo is MacUser's technical editor.**

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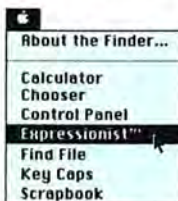
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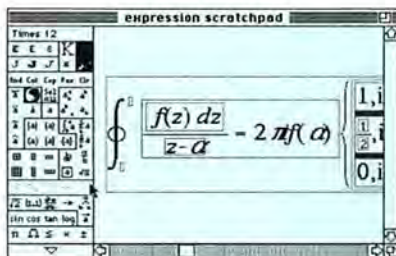
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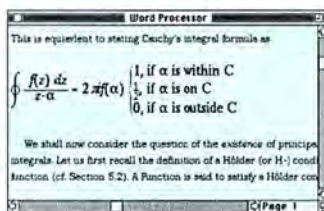
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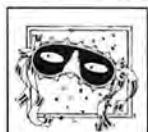
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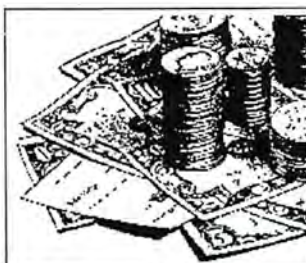
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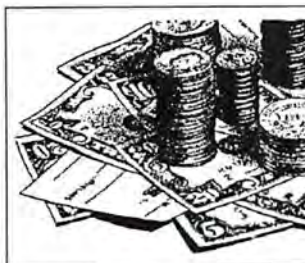
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# THE HELP FOLDER

B Y C H R I S E S P I N O S A

*Got a Mac problem? Something you'd like explained? Something you can't find the answer for anywhere else? Apple's Chris Espinosa will answer your questions every month in this space. When the questions are too tough or too esoteric for him, he'll get the answers from other members of the Mac team. So ask what you need to know and get your answers straight from the source!*

*Send your questions to Chris, c/o MacUser, 950 Tower Lane, 18th floor, Foster City, CA 94404. Chris will read all your questions, but, unfortunately, he may not be able to answer individual queries.*

## UPGRADING A 512K MAC

**Q.** I have an SE system in the office, and I recently purchased a secondhand 512K for home use. I'd like to upgrade the 512K so that it will read double-sided disks, and so that I can plug in a hard disk. This seems to be a very difficult task in Japan.

I've had several quotes from Apple dealers, all running to several thousand dollars, to carry out this sort of upgrade. It sounds as though I have to replace the internal drive, the logic board, and the entire back of the computer to do the job. What I

need now is some specific advice on part names and numbers, and names and addresses of authorized Apple dealers who are able and willing to ship these parts overseas.

Can it be done, or am I stuck with the old 512K, suffering daily in comparison with the accelerated SE?

GILES D. GOLDSBRO  
YOKOHAMA, JAPAN

**A.** You can take a couple of routes, but first be aware that your old Mac won't ever zip along as fast as an SE. If that's what you want, it'd be cheaper to buy a new SE than to hop up the old equipment.

What you can do is turn your 512K into a Mac Plus. Your information is correct: To upgrade the Macintosh 512K, you need to replace the logic board, disk drive, and back case (the logic board has new connectors, for the SCSI disk-drive interface among other things, and those connectors need to have the right holes in the plastic back). There are three upgrade kits to buy: the Macintosh Plus Disk Drive Kit includes an 800K disk drive and 128K ROM and requires dealer installation; the Macintosh Plus Logic Board Kit includes a digital board with 1 megabyte of RAM and a new

back panel for the external SCSI port and requires dealer installation; and the Macintosh Plus Keyboard Kit includes (guess what) a Mac Plus keyboard.

No authorized Apple dealer will mail these to you because they require dealer installation.

But if you want accelerated performance without the expense, you might try this approach: Get a memory upgrade for your 512K. Then find a secondhand Apple Hard Disk 20 (not the HD20SC) and a secondhand external 800K disk drive. Plug the disk drive into the back of the HD20, make sure the HD20 file is on your System folder, boot off of a floppy disk, and you're set: You have a hard disk, an 800K floppy, and a lot of memory for a lot less money than the full upgrade. It won't be as fast, you'll have to boot from a floppy disk (unless you spring for the ROM upgrade), and your expansion possibilities will be much more limited, but you'll be running.

## HYPERCARD QUERY OF THE MONTH

**Q.** For several years I have been using PFS:File as a database for our bibliographical list of scientific publica-

tions. Unfortunately, this is not the most efficient program for this purpose, and we are seeking an alternative. Because our list is relatively long (around 3,000 entries), it's impractical to reenter the data. Is there a way to transfer this data to a different program, preferably to HyperCard?

ASAF KELLER  
NEW YORK, N.Y.

**A.** Unfortunately, PFS:File provides no way to "export" information from its files. You can print a report to disk, which will give you a plain text file, but this file will not be in the standard "delimited" format that other programs can easily read. You'll need a customized program or HyperCard script to extract data from the report-to-disk file.

## DOWN IN THE TOOLBOX

**Q.** I'm trying to write an application using Lightspeed Pascal on my Mac Plus, but I'm encountering a user-interface problem. The program I'm creating requires selecting from a database. I want to create a list box that contains all the possible items and accepts selections from the user. However, I can't find a Toolbox routine to perform this function. I'm considering writing my own



# THE HELP FOLDER

routine, but I haven't got a clue how to do it. Can you give me a hint as to whether this kind of toolbox exists?

SAMMY LAM  
SUGARLAND, TEXAS

**A.** There wasn't such a Toolbox utility in the original Macintosh System software, but Apple corrected that oversight with the Macintosh Plus, and the List Manager that's included in the System software after version 4.0 is just what you want. You give it a list of text elements, and it handles drawing, updating, scrolling, and selection from that list as well as changing, adding, or deleting elements. It sup-

ports both one-dimensional lists (like filenames in Standard File) and 2-D lists (like spreadsheets). Text lists are the simplest to work with, though you can define your own lists for graphics or icons.

This is documented in *Inside Macintosh, Volume IV*. Some development systems don't include interfaces for the newer parts of the System.

These are the formal descriptions of the new routines in the jargon of your development system. Version 2.0 of Symantec's THINK's Lightspeed Pascal supports all the Toolbox routines from *Inside Macintosh*.

## SLIGHTLY EXPANDABLE

**Q.** I recently purchased a Quantum 40-megabyte internal rear-mounted hard disk for my Macintosh SE. It works very well, but on the other hand, it takes up some space in my Mac.

A friend of mine said that I won't be able to install a video card in my Macintosh because of the extra space needed by the hard disk. In fact, I've seen how certain video cards are installed in a Mac SE, and I must admit that I have some doubts about installing a video card in mine now.

Could you please tell me how I can have an internal

rear-mounted hard disk and a video card at the same time in a Macintosh SE?

LUC RÉGIS  
CHICOUTIMI, QUEBEC,  
CANADA

**A.** A Macintosh SE is pretty cramped inside to start with, and it usually can't take more than one internal add-in. Hard disks that aren't the same size as Apple's add-in drive may limit the space available for other boards, which are carefully designed to fit in an SE with an Apple hard drive. Unfortunately, it's hard to tell whether a card will fit along with your larger hard drive without actually trying to

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install it. Try calling the manufacturer to see whether they have any experience with the Quantum drive.

You should exercise the same caution with SIMM strips. During the memory shortage, a number of vendors introduced SIMM strips with full-size chips on them, but these larger strips interfere with add-in boards.

So when buying add-ins, check the data sheet or literature to see whether the device stays within Apple's guidelines.

#### HOW FAST IS FAST?

**Q.** I own a Mac Plus with one external floppy drive. I'd like

to buy a hard disk to speed up my operation and organize things a little better. I'd like to avoid buying an expensive, "super-hot" drive that is only "hot" on a Macintosh II, when I could buy a cheaper drive that works well on the Mac Plus.

I heard that the Mac Plus is supposed to use a drive with a 3:1 interleave, so is there any advantage or disadvantage to getting a drive capable of 1:1? I see the average access time advertised, but how does a few milliseconds affect the average time it takes to load a program or data file? Also, is the maximum transfer rate of the drive a consideration, or do all drives trans-

fer at the maximum transfer rate of the SCSI port? Also, does a hard disk greatly save time over the conventional 800K floppy drive?

STEVEN A. BROWN  
KAYSVILLE, UTAH

**A.** First of all, the answer to your last question is a strong yes. It's hard to find a hard-disk drive that's not faster than an 800K floppy, and the speed difference is noticeable in just about everything you do. More importantly, a hard disk gives you several kinds of freedoms. First, you don't have to fool around with different start-up disks for different applications, and when you up-

grade your system software, you have to update only your one hard disk, not several application disks. You also get the freedom to collect more fonts and desk accessories, and you have access to them from all your applications.

But your speed questions are well founded, although the answers don't mean much (you'll see what I mean later).

The speed of a disk drive is a combination of the seek time (the time it takes the magnetic recording head to get from one place to another), the transfer rate (how fast it gets information from the head), and the interleave ratio (the number of

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# THE HELP FOLDER

"breathers" the disk must take between sectors to let the computer catch up). Some external forces, like the speed of the SCSI port and the software on the Mac side, also enter into the equation — usually to limit the maximum performance you can get out of a disk.

The seek time makes a big difference if you'll be reading and writing big files or opening and closing a lot of different files frequently. Since those operations move the head around a lot, the "few milliseconds" add up to noticeable delays. If you mainly just double-click applications and open and save small documents, it won't matter that much.

Transfer rate is the main determinant of speed. It's the flat-out speed at which the drive can get bytes into the Mac. But many drives don't run flat-out. This is because they're faster than the SCSI port (or the Mac) can handle, so they take a breather after each 256 or 512 bytes. That breather is called the interleave: a 3:1 interleave means the disk lets two sectors go by for every one it reads, while a 1:1 interleave drive doesn't skip any.

Typically, a Mac Plus cannot keep up with a 1:1 interleave. When it misses a sector, it has to wait a full revolution until the sector again passes under the drive

head, slowing things down considerably. But different manufacturers write their own drivers that squeeze 1:1 performance out of a Mac Plus, which normally uses a 3:1 interleave.

Often all these details get lost in how you actually use the disk. Do you use a lot of applications or only a few? Will your files become fragmented (spread out) or remain relatively stable? The only real measure of a disk's speed is actual use. Check the MacUser Labs report on "Big Hard Disks" in the June '88 issue. Even if you're not looking for a large-capacity drive, you'll find a detailed discussion of the technical issues.

## CUT-AND-STITCH

**Q.** I need medical clip art and can't seem to find any. I'm after cavities, systems, organs, and body outlines that I can manipulate according to my needs. Sounds morbid, I know, but that's life . . .

SUSAN KREN CUTTER, RN, MA  
TIBURON, CALIF.

**A.** MacMedic Publications Inc., 7530 Harwin Drive, Houston TX 77036; (713) 977-2655, publishes MacAnatomy, available in four individual volumes (\$95 each, or the complete set for \$350). It's a complete electronic atlas of human anat-

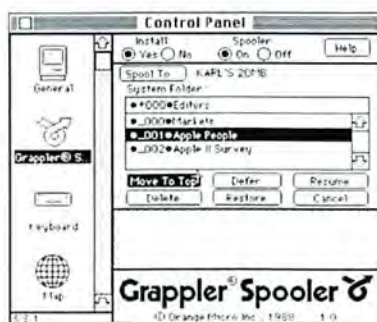
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my on disk in MacPaint document form: head and neck, abdomen and pelvis, GI tract, heart and lungs, thorax, nervous system, limbs, bones and joints, and cross sections. If you have a CD-ROM drive, you could check out The Electric Cadaver from Stanford University (see "The Body Electric" in the March '89 issue).

Sounds like your cup of tea, Nurse Cutter.

#### WILL IT HURT IT?

**Q.** I just acquired a new SE after spending two years with a Mac Plus. I sold my Plus because the power supply was failing for the sec-

ond time! My questions are: Can plastic covers, such as the ones from Egghead Software, create static that can run the power supply down? With the SE's power supply beefed up, can I rest assured that the power supply will remain strong, especially since I have the two-disk option and not the hard drive?

MARK RADGONA  
WALNUT, CALIF.

**A.** Static buildup from plastic covers (or wool sweaters or whatever) can hurt low-voltage electronic components that are unprotected. The Mac protects its internal components by a conductive shell around the en-

tire computer (which also helps minimize radio-frequency interference). And the components on your power supply are high-voltage and are not normally affected by any amount of static.

But a power supply can be weakened by having too much power drawn from it, and the Mac Plus was designed with a pretty small power surplus. The Mac SE has a larger surplus of power, for internal hard disks as well as additional internal boards (like accelerators or video boards). It has a larger power margin than the Plus even when all those options are installed.

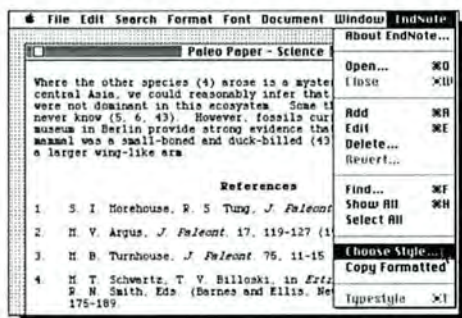
Since you don't have a

hard disk, your power supply should be able to run your system safely.

#### WHETHER STRIPS?

**Q.** Can anyone find out whatever happened to the Cauzin Soft-strip Reader? What happened to all the free stripware programs that were printed mostly in magazines? It seems to me that Cauzin conned a lot of people into buying its reader for \$199.95 and promising us free monthly software along with their mailings of their "monthly" newsletter. Does anyone know what happened to this new technology?

T. C.  
MILFORD, CONN.



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# THE HELP FOLDER

**A.** They're still around and still selling the Softstrip readers. But apparently they didn't "con" enough people to buy their readers, so magazines and other publications (including this one) stopped devoting page space to address the tiny percentage of computer users who were Softstrip owners.

There are other, more fertile places to get a variety of utility software (user groups and on-line bulletin boards, for example) and other ways to convey a whole lot of information cheaply (CD-ROM, for example, which is cheaper per byte than offset printing of Softstrips).

So it never achieved the critical mass of users it needed to really take off. Neither did lots of other new technologies. Remember the Timex Sinclair?

## TROUBLE WITH AN NTX

**Q.** I'm having trouble printing graphics on my LaserWriter IINTX. When the graphics have very large black areas, I get very slim horizontal white lines in the black areas.

M. DAVID MAYER  
BEAUMONT, TEXAS

**A.** If you look very closely at the sample you sent, you can see that the lines go

through *all* black areas, not just solid ones. And the lines are very thin; in fact, I'll bet that they're 1/300th of an inch thick, because that's the size of a single dot on a LaserWriter page.

And they're spaced a little less than half an inch apart. In fact, if you measure the spacing over a large interval, the lines occur about every 128/300th of an inch. That means that every 128th scan line is missing.

The problem is with the RAM inside your LaserWriter IINTX. The PostScript software inside your LaserWriter printer forms an image of the whole page in the printer's RAM, then

transfers this image all at once to a laser beam that scans across and down the page. The printer's RAM stores nearly a megabyte of page image and also uses some RAM to store fonts and programs. It looks like one of the RAM chips that stores the page image has gone bad and isn't storing information properly. When the LaserWriter IINTX tries transferring its contents to the laser beam, all it gets is that thin white line.

Luckily, the RAM in the LaserWriter IINTX is snapped into SIMM sockets just like in a Macintosh, so it should be easy for your dealer to replace the bad RAM chip. ☐

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### 30 Megabyte

MacBest 30 28ms	\$549.	<b>\$499.</b>
MicroNet 30 38ms	\$579.	<b>\$569.</b>

### 40 Megabyte

Conner 40 28ms	\$669.	<b>\$639.</b>
MacBest 45 28ms	\$599.	<b>\$579.</b>
MicroNet 46 40ms	\$649.	<b>\$569.</b>
Quantum 40* 19ms	\$699.	<b>\$649.</b>

### 60 Megabyte

MacBest 60 28ms	\$729.	<b>\$649.</b>
MicroNet 60 28ms	\$739.	<b>\$699.</b>

### 80 Megabyte

MacBest 80 28ms	\$849.	<b>\$779.</b>
Quantum 80* 19ms	\$949.	<b>\$899.</b>

### 90-100 Megabyte

Conner 100 25ms	\$999.	<b>\$929.</b>
MacBest 90 18ms	\$939.	<b>\$879.</b>

### 150-173 Megabyte

CDC 150 17ms	\$1,579.	<b>\$1,475.</b>
MicroNet (CDC) 173 18ms	\$1,649.	<b>\$1,599.</b>

### 300-600 Megabyte

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All hard disk drives carry a manufacturers one year warranty except for the  
\*Quantum drives, which have a manufacturers two year warranty.

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## TOP 40

## TOP 40

## TOP 40

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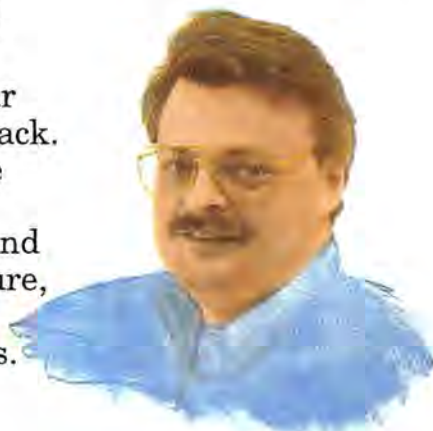
Mac II 16" Sony Color System, 7695  
2 Mb RAM, 60 mb hard drive, Mac 101  
Keyboard

Mac II 19" Sony Color System, 10595  
5 Mb RAM, 160 mb hard drive, Mac 101  
Keyboard

Mac SE 030 w/1 SuperDrive, 4299  
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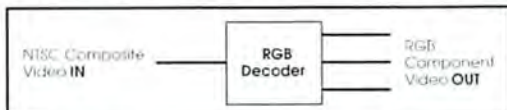
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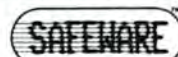
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# UPDATES

Times are changing, and so are many versions of your favorite programs. With all of life's daily changes, keeping up with software upgrades and new versions is no easy task.

The following chart may help you retain your sanity by keeping you up-to-date on the most current versions (as of press time) of many popular programs. To see if

you have the most current version of a program, check the About command at the top of the Apple menu when you run a program.

One of the hottest new upgrades this month is Silicon Beach's SuperPaint 2.0, whose enhanced features include AutoTrace, object replication, Bezier curves, plug-in tool options, and variable document sizes.

Those of you with the 512K, 512KE, or XL should be running System 3.2 and Finder 5.3. Everyone else should be running System 6.0.3. All programs listed here are Hierarchical File System (HFS) compatible.

From this chart, you can extract the following information: CP or NCP, copy protected or not; //, programs we have found to be

Mac II compatible (not yet a comprehensive list); and S, for shareware (try before you buy). Changes and new listings are in **bold**. Programs that appear to be compatible with the Mac II family may not actually perform 100 percent of the functions they do on other Macs, and may not necessarily take full advantage of the Mac II.

A.A.I.S. Prolog	M1.15	NCP	1st Aid Kit-HFS	2.5	NCP//	MacLinkPlus	4.0	NCP//	Pyro!	3	NCP//
Aatrix TimeCard	2.0	NCP//	<b>FontTastic Plus</b>	2.0	NCP//	MacMoney	3.02	NCP//	QuarkStyle	1.0	NCP//
Accountant, Inc.	2.1	NCP//	FontFolio	1.0	CP//	MacMovies	1.02	NCP	QuarkXPress	2.0A	NCP//
Acta	2.0	NCP//	Font/DA Mover	3.8	NCP	MacNosy V2	2.8	NCP	QUED/M	2.07	NCP//
AffiniFile	1.1	NCP//	Fontographer	2.3	CP	MacPaint	2.0	NCP//	QuickKeys	1.1	NCP//
<b>AIVision</b>	3.0	NCP//	FontShare	1.1	NCP//	MacPalette	1.0	CP	QuickMail	2.0	NCP//
AMS General Ledger	2.08	NCP	Forecast	2.0	NCP//	MacPascal	2.1	CP	QuickWord	2.0	NCP//
AppleShare			4th Dimension	1.06	NCP//	MacProject II	1.0	NCP//	Rags to Riches	3.0	CP//
Workstation	2.0.1	NCP//	FoxBASE + /Mac	1.10	NCP//	MacProof	3.0	NCP	Ragtime	2.01	NCP//
ArtRoom	3.0	NCP//	Frame Mac	1.1	NCP//	MacSchedule	1.1	CP//	Read-It!	2.0	NCP//
Assistant Controller	5.4	NCP//	FreeHand	2.0	NCP//	MacScheme +			Ready, Set, Go!	4.5	NCP//
<b>A/UX</b>	1.1	CP//	FreeTerm	2.0	NCP//	Toolsmith	1.51	NCP//	Record Holder	2.1	NCP
Aztec C	3.4b	NCP//	FullPaint	1.0	NCP	MacServe	2.3	CP//	REdit	1.2	NCP
<b>BackFax</b>	1.02	NCP//	FullWrite Professional	1.0	NCP//	MacSpec	1.3	CP	Red Ryder	10.3	NCP
Backgrounder	1.2	NCP	General	3.3	NCP	MacSpin	1.1	CP	Reflex Plus	1.01	NCP//
Back to Basics	1.03	NCP	GeoQuery	1.01	NCP//	MacSpool	3.0	NCP//	Reports	1.2	NCP//
Bulk Mailer	3.23	NCP//	Glue	1.04	NCP	MacTell	3.5	NCP//	ResEdit	1.1b7	NCP//
Business Filevision	1.1	NCP	GraphicWorks	1.13	NCP	MacTerminal	2.3	NCP//	Sales Associate	1.10	NCP//
<b>Business Sense</b>	1.2	NCP//	Handwriting Analyst	1.2	NCP//	MacTools (MFS/HFS)	7.1	NCP	Scrapbook	2.4	NCP//
CalendarMaker	3.0	NCP//	Hard Disk 20	1.1	NCP	MacWrite	5.0	NCP//	SCSI Tool	1.1	NCP//
Canvas	2.0	NCP//	Hard Disk Utility	2.0	NCP	Mac Zap	5.0	NCP//	Sensible Grammar	1.1d	NCP//
Capture	1.1	NCP//	HD Backup	1.1	NCP	MailManager	1.0	CP	SideKick	2.0	NCP
CAT	2	NCP//	HD SC Setup Apple	2.0	NCP	Managing Your Money	2.0	NCP//	Silicon Press	1.1	NCP
Chart	1.02	NCP	HFS Backup	3.0	NCP//	Map	1.1	NCP	Slide Show Magician	1.3	CP
Chooser	3.3	NCP	HFS Locator Plus	2.0	NCP	Maple	4.2	NCP//	Smartcom II	3.0a	NCP//
ClickArt Effects	1.01	NCP//	HyperAnimator	1.5	NCP//	MapMaker	3.0	NCP//	SmartScrap & Clipper	2.01	NCP//
Clipper	1.01	NCP	<b>HyperCard</b>	1.2.2	NCP//	Master Tracks Pro	3.3	CP//	SmoothTalker	3.0	NCP
CloseView	1.0	NCP	HyperDA	1.1	NCP//	MathWriter	2.0	NCP//	Sound	3.3	NCP//
Cognate	1.5	NCP//	HyperEngine	1.1	//	Mavis Beacon Teaches			SoundCap	4.4	CP
Colleague	1.1	NCP//	Illustrator	1.0	CP/NCP	Typing!	1.2	NCP//	Space Edit	2.0	CP//
ColorChart	1.3	NCP	ImageWriter	2.7	NCP	<b>McMax</b>	2.0	NCP//	SpellNow	1.0	NCP
Colorizer	1.1	NCP//	ImageWriter, AppleTalk	2.7	NCP	MDA	2.0	NCP//	Spellswell	2.0f	NCP//
ColorMate	2.1	NCP	ImageWriter LQ	2	NCP//	MDS	2.0	NCP	Startup Device	3.3	NCP//
ColorPrint	2.03	NCP	ImageWriter LQ,			Measure Test	12.7	CP/S//	StatView 512+	1.1	NCP
Comic Strip Factory	1.6	NCP//	AppleTalk	2	NCP//	Megamax C	3.0	NCP	StatWorks	1.2	NCP//
Comic Works	1.0	NCP//	InBox	3.0	NCP//	<b>MetaDesign</b>	2.0	NCP//	Stella	1.3	CP//
Comment	2.0	NCP//	Insight Expert			MGMSStation CAD	2.5	NCP//	Stepping Out II	2.01	NCP//
ConcertWare +	4.0	NCP//	Accounting	2.01	NCP//	MicroPhone	1.5	NCP//	Straight Talk	2.08	NCP//
ConcertWare + MIDI	4.0	NCP//	Installer	2.04	CP//	MicroPhone II	2.0	NCP//	Studio Session	1.4	CP
Control Panel	3.3	NCP	<b>Instant-Expert</b>	2.0	NCP//	Micro Planner Plus	6.0	NCP//	Suitcase	1.2.1	NCP//
Copy II HD	7.1	NCP	inTalk	3.0	NCP//	MindWrite	2.0	NCP//	Suitcase II	1.2	NCP//
Copy II Mac	7.1	NCP	Interleaf Publisher	3.5	CP//	MockPackage +	4.4	NCP//	SUM (Symantec		
Course Builder	3.1	NCP//	Jam Session	1.1	CP//	Modern Artist	2.0	NCP//	Utilities for Macintosh)	1.1	NCP//
Cricket Draw	1.1.1	NCP//	Jazz	1A	CP	MORE II	2.0	NCP//	SuperGlue	1.05	NCP//
Cricket Graph	1.2	NCP	JustText	1.1	NCP	Mouse	3.3	NCP	<b>SuperPaint</b>	2.0	NCP//
Cricket Presents	2.0	NCP//	Keyboard	3.3	NCP	MPW	3.0B1	NCP//	Switcher	5.1	NCP
Curator	1.05	NCP//	Key Layout	2.3	NCP//	MS BASIC	3.0	NCP	Systat	3.2	NCP
DA Handler	6.0	NCP	Language Systems			MS BASIC Compiler	1.0	NCP	<b>System (HFS)</b>	6.0.3	NCP//
Deluxe Music	2.5	NCP//	FORTRAN	1.2	NCP//	MS Fortran	2.2	NCP	System (MFS-128K)	2.0	NCP
Design/IDEF	1.1	NCP//	LapLink TRAC	2.0	NCP//	MS Works	1.1	NCP//	Telescope	1.0	NCP//
DesignScope	1.14	NCP//	Laser Author	1.3	NCP//	MultiFinder	6.0	NCP//	Telescope Pro Vt 100	1.1	NCP
DeskLink	2.0	NCP//	LaserPaint	1.9	NCP//	Multiplan	1.11	NCP//	Tempo II	1.1	NCP//
Disk Express	1.10	NCP	Laser Prep	5.2	NCP	Music Publisher	2.0	NCP//	Tetris	1.1	NCP//
Disk First Aid	1.4	NCP	LaserShare	1.0	NCP	MusicWorks	1.1	CP	<b>TextPert</b>	3.0	NCP//
DiskFit	1.5	NCP//	LaserSpeed	1.6	NCP//	myDiskLabeler	2.11	NCP//	Textures	1.01	NCP//
DiskInfo	1.45	NCP/S	LaserStatus	2.0	NCP	<b>Navigator</b>	3.0	NCP//	Think 'n Time	2.0	NCP//
Disk Ranger	3.1	NCP	LaserWriter	5.2	NCP	'Ncryptor	2.0	NCP//	Thunder!	1.0.1	NCP
Disk Tools Plus	1.01	NCP//	LaserWriter IISC	1.1	NCP	Neon	2.0	NCP	Thunderscan	4.0	NCP
<b>DiskTop</b>	3.0.4	NCP//	Layout	1.3	NCP/S	Omnis III Plus	3.3	NCP//	Timeslips III	1.1	NCP//
<b>Dollars &amp; Sense</b>	4.1c	NCP//	Legal Billing	1.86	NCP//	On Cue	1.3	NCP//	TML Pascal II	3.0	NCP//
Double Helix II	r40	NCP//	Legal Billing II	2.56	NCP//	Orbiter	1.2	NCP//	TMON	2.8	NCP
"Draw it Again, Sam"	2.04	NCP//	LightSpeedC	3.0	NCP//	OverVUE	2.1e	NCP//	Top Desk	3.0	CP
Dungeon Revealed	1.2.3	NCP//	LightSpeed Pascal	2.0	NCP//	PageMaker	3.01	NCP//	TOPS	2.0	NCP//
Easy Access	1.0	NCP	Listen 2.0	2.1	CP//	Parameter Manager			Trapeze	2.1	NCP//
Easy3D	1.01	NCP	Lookup	1.0c	NCP//	Plus	3.0	NCP//	Turbo Download	2.1	NCP//
Edit	2.1	NCP	Mac3D	2.1	NCP//	Performer	2.31	CP	Turbo Maccountant	2.0	NCP//
Excel	1.5	NCP//	MacASM	1.2	NCP	PictureBase	1.2	NCP	Turbo Pascal	1.1	NCP//
ExperCommon Lisp	2.2	NCP	MacBillboard	4.01	NCP/S	P51 Mustang Flight			Type Now	1.0	NCP//
ExperLisp	1.5	NCP//	Mac C	5.0	NCP//	Simulator	2.02	CP//	<b>VersaCAD</b>	2.1	NCP//
ExperLogo	1.1	NCP	MacCalc	1.2	NCP	Plains and Simple	4.1	NCP//	VersaTerm	3.0	NCP
Expressionist	2.0.3	NCP//	MacChuck	1.5	NCP//	PLP	2.0	NCP//	VersaTerm Pro	2.0	NCP
EZ Draft	2.0	NCP//	Mac Daisy Link	1.04	NCP//	PowerPoint	2.01	NCP//	VideoWorks II	2.0	NCP//
Falcon	2	NCP//	MacDesigner	2.0	NCP//	PowerStation	2.5	NCP//	VIP	2.5	NCP//
FastBack	1.02	NCP//	Mac Disk Catalog II	2.1c	NCP	Print Monitor	1.2	NCP//	Virex	1.1	NCP//
Fast Forms	1.2	NCP//	MacDraw II	1.1	NCP//	Professional Composer	2.1	CP	Widgets	3.0	NCP
File	2.0	NCP//	MacDraft	1.2b	NCP//	Profit Stalker II	1.3	NCP	Word	4.0	NCP//
Ferrari Grand Prix	1.5	CP//	MacFlow	2.04	NCP//	Programmer's Online			<b>WordPerfect</b>	1.0.2	NCP//
Filemaker II	1	NCP//	MacFortran (all)	2.4	NCP//	Companion	2.0	NCP//	Works	2.0	NCP//
<b>Finale</b>	1.2	NCP//	MacFortran / A/UX	1.0	NCP//	Project Billing	3.0	NCP//	WorksPlus Spell	2.0	NCP//
Finder (HFS)	6.1	NCP	MacGolf Classic	3.0	CP//	<b>PROpsFORMS</b>	2.0	NCP//	Write	1.0	NCP//
Finder (MFS-128K)	4.1	NCP	MacInTalk	1.1	NCP	Prototyper	2.0	NCP//	WriteNow	2.0	NCP//
Findswell	2.0	NCP//	MacLabeler	2.2	CP	<b>Publish or Perish</b>	3.0	NCP//	ZBasic	4.0	NCP



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- Back to Basics Accounting** tttt  
is a powerful double-entry accounting software package for the small business user with general ledger, accounts receivable, and accounts payable modules. Exhaustive manual with numerous examples. Report capabilities are excellent. \$199. Peachtree, 4355 Shackleford Road, Norcross, GA 30093. NCP (May '87)
- BPI General Accounting** tttt  
is an easy-to-use system. Six journals, Accounts Receivable, Accounts Payable, Payroll, and General Ledger on one disk. Offset amounts automatically post to ledgers. Up to 8,000 accounts. Detailed records, wide range of reports. Requires 512K or more. \$89. Computer Associates, 1240 McKay Drive, San Jose, CA 95131. NCP (Aug '86)
- Insight** tttt½  
is a high-powered accounting program for the small-to-medium-sized business. Modules include Accounts Receivable, Payables, and General Ledger; others are in the works. Requires 512K and hard disk. \$595. Layered, 529 Main St., Boston, MA 02129. NCP (Dec '86) ★'86 Eddy
- Rags to Riches Professional Billing** tttt  
tracks and bills professional services. Batches activities for individual time-keepers. Use as stand-alone, or integrate with R to R modules. Requires 512K or more, printer. \$399.95. Chang Labs, 5300 Stevens Creek Blvd., San Jose, CA 95129. NCP (Feb '87)
- Simply Accounting** tttt  
has six ledgers and eight journals to handle the needs of most small-to-medium-sized businesses. Better Mac interface than most. Payroll tax labels can't be modified, which forces you to subscribe to Bedford's yearly update service. Version 1.03. Requires 1 megabyte. \$349. Bedford Software, 15311 N.E. 90th St., Redmond, WA 98052. NCP (Sept '88)
- Timeslips III** tttt½  
tracks billing and expense information for people who charge by the hour. DA turns the clock on and automatically bills a client when a session is over. Version 1.06. Requires 512K and two disk drives. Mac II and MultiFinder friendly. \$199.95. North Edge Software, 239 Western Ave., Essex, MA 01929. NCP (Sept '88) ★'88 Eddy

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## Personal Finance

- Dollars & Sense** ttt  
is a bookkeeping program. Easy to use, with a good manual and excellent on-screen help. Will handle up to 120 separate accounts or money categories. Uses standard double-entry accounting techniques. Will work on 128K. \$149.95. Monogram, 8295 S. La Cienega Blvd., Inglewood, CA 90301. CP (Mar '87)
- MacInTax** tttt  
is an excellent tool for preparing tax forms. Intuitive, easy-to-use. Accepts data from leading personal-finance programs. Good built-in help. Liberal upgrade policy for current owners. California forms set also available. \$119 federal; \$65 California. SoftView, 4820 Adohr Lane, Suite F, Camarillo, CA 93010. NCP (Mar '87) ★'86 Eddy
- MacMoney** tttt  
is a financial manager that uses information gleaned from your checks and deposit slips. Produces a variety of reports and graphs. Version 3.1 reviewed. Requires 512KE and printer. \$119.95. Survivor Software, 11222 La Cienega Blvd., Inglewood, CA 90304. NCP (July '88) ★'86 Eddy
- Managing Your Money** tttt  
is a feature-laden personal-accounting system with added financial and time-management functions. Uses double-entry accounting. Too-cute documentation. Version 2.0. \$219.95. MECA Ventures, 355 Riverside Ave., Westport, CT 06880. Requires 1 megabyte, 128K or later ROMs. NCP. (Apr '89)
- Quicken** tttt  
helps you write checks, then keeps a ledger showing you where your money goes. Tax information is generated automatically. Version 1.0. Requires 512K and printer. \$49.95. Intuit, 540 University Ave., Palo Alto, CA 94301. NCP (Nov '88) ★'88 Eddy
- Wall Street Investor** tttt  
spots stock market trends. Downloads information from an electronic service. Good charting ability. Previously known as Market Pro. Version 3.0. Requires 1 megabyte, two 800K drives or hard disk. Hayes-compatible modem, and an I.P. Sharp account. \$695. Pro Plus Software, 2150 E. Brown Road, Mesa, AZ 85203. NCP (Oct '88)
- Databases**
- C.A.T.** tttt  
is a dedicated relational database for managing contacts, activities and time. Links between types of data make it easy to keep track of important people and events. \$399.95. Chang Laboratories, 5300 Stevens Creek Blvd., San Jose, CA 95129. NCP (Nov '87)



# MINIFINDERS

**dBASE Mac** ★★★★  
is a relational DBMS that includes a structured programming language to develop stand-alone applications. Palette icons as alternatives to menu commands will help novice users. Requires 1 megabyte or more. \$495. Ashton-Tate, 20101 Hamilton Ave., Torrance, CA 90502-1319. NCP (Feb '88)

**Double Helix II** ★★★★½  
is a powerful database that supports a multiuser environment with an upgrade. Uses an icon-based development system for easy creation of databases. \$595, single-user version. Odesta, 4084 Commercial Blvd., Northbrook, Ill 60062. NCP (Apr '88)

**EndNote** ★★★★½  
provides database management for bibliographies. Designed to work in conjunction with a word processor. Allows for formatted in-text citations to be pasted directly into a word-processing document and then creates a bibliography from the citations. Version 1.0 reviewed. \$129. Niles & Associates, 2200 Powell St., Suite 765, Emeryville, CA 94608. NCP (Feb '89)

**FileMaker II** ★★★★½  
is a multiuser version of the all-time best flat-file manager for the Macintosh. New features include more flexible layouts, hierarchical menus, and color on the Mac II. Version 1.0. Requires 1 megabyte with two 800K drives or a hard-disk drive. \$299. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP (Dec '88)

**4th Dimension** ★★★★½  
is a versatile tool that creates stand-alone relational databases. Design and layout environments allow easy linking of information. Robust. Pascal-like procedure language. \$695. ACIUS, 20300 Stevens Creek Blvd., Cupertino, CA 95014. NCP (Nov '87) ★'87 Eddy

**FoxBASE+Mac** ★★★★½  
is a relational database that can read unmodified dBASE III PLUS applications created in the MS-DOS world. Amazingly fast. Good implementation of dBASE on the Mac. Version 1.0. Requires 1 megabyte. Mac II and MultiFinder friendly. \$395. Fox Software, Inc., 118 W. South Boundary, Perrysburg, OH 43551. NCP (Sept '88) ★'88 Eddy

**MBA Series** ★★★★  
is a set of 11 multiuser business applications that run under ACIUS' 4th Dimension. It's also an automated programming environment for developing additional 4th Dimension applications. Requires 1 megabyte and 4th Dimension. \$189 per application, unlimited users. Generation Four, 3232 San Mateo N.E., #199, Albuquerque, NM 87110. NCP (May '89)

**Omnis 3** ★★★★  
is a powerful database, featuring concurrent multiple-file management. Can handle 24 files, 12 at a time, and is fully relational. Create custom environments, including user-defined menus, commands, and dialog boxes. \$495. Blythe, 2929 Campus Drive, San Mateo, CA 94403. NCP (Mar '86)

**OverVUE** ★★★★½  
is a power-packed relational database that has extensive sorting, summarizing, and report-generation capacity. Has macros and a charting function. Good manual. It can exchange files with a wide variety of other programs (including IBM software). \$295. ProVUE, 222 22nd St., Huntington Beach, CA 92648. NCP (Nov '85) ★'85 Eddy

**Panorama** ★★★★  
is the direct descendant of OverVUE. It keeps your database in RAM for incredible speed and has a spreadsheetlike basic data-entry screen. Supports text, numbers, graphics, and dates as data types. Features Clairvoyance for easier data entry. Has a powerful charting function and macros. An excellent flat-file manager. Version 1.0. Requires 1 megabyte, two 800K drives. \$395. ProVUE Development, 15180 Transistor Lane, Huntington Beach, CA 92649. NCP (June '89) ★'88 Eddy

**Pro-Cite** ★★★★½  
is a complete database-management system for bibliographies. Almost unlimited flexibility in the formatting of bibliographies. Full-featured search and sort capabilities. Version 1.3 reviewed. Requires 512KE. \$395. Personal Bibliographic Software, Inc., P.O. Box 4520, Ann Arbor, MI 48106. NCP (Feb '89)

**Record Holder Plus** ★★★★  
is a flexible, easy-to-use, form-oriented data manager. Setup is particularly simple, and the search features are powerful. \$69.95. Software Discoveries, 137 Krawski Drive, South Windsor, CT 06074. NCP (Apr '86) ★'87 Eddy

**Reflex Plus** ★★★★  
is a relational database with "smart" entry and report design, but no overall programming facility. Simple to set up, yet fast. Graphic capabilities are quite limited. Version 1.0 reviewed. \$279. Borland/Analytica, 4585 Scotts Valley Drive, Scotts Valley, CA 95066-9987. NCP (Feb '88)

**Writer's Workshop** ★★★★½  
maintains orderly records for writers. It can track manuscripts, income, and publisher. Based on and includes Runtime Helix. \$99.95. Futuresoft System Designs, P.O. Box 132, New York, NY 10012. NCP (Apr '87)

## Number Crunching

**Data Desk Professional** ★★★★½  
lets you visually look at statistics with more ease than any comparable Macintosh program. Plots variables so you can analyze data to see what

patterns develop. Version 2.0. Requires 1 megabyte and two 800K disk drives or hard disk. \$495. Odesta, 4084 Commercial Ave., Northbrook, IL 60062. NCP (Nov '88)

**Excel** ★★★★  
was the first power spreadsheet on the Mac. Has 256-column-x-16,384-row capability. Features include a powerful macro function (with a recorder to make creation simple) and elaborate charting facilities. 512K or more and external drive required. \$395. Microsoft, 16011 N.E. 36th Way, Redmond, WA 98073-9717. NCP (Prem) ★'85 Eddy

**MacCalc** ★★★★  
is a fast, competent, full-featured spreadsheet with impressive built-in functions, font control, on-line help, ability to expand columns and rows, and read/write SYLK or WKS files. The worksheet is 125 columns by 999 rows. A very flexible, pure spreadsheet. \$139. Bravo Technologies, P.O. Box 10078, Berkeley, CA 94709-0078. (Sept '86) ★'86 Eddy

**MacSpin** ★★★★  
is a unique and powerful program for graphic-data analysis. Handles multivariate data in a highly visual manner. Nothing else like it for any micro. \$199.95. D2 Software, P.O. Box 9546, Austin, TX 78766-9546. CP (June '86) ★'87 Eddy

**MacSQZ!** ★★★★  
compresses Excel files up to 88 percent of their actual size. Good to free up disk space. Also contains password utility. MultiFinder hostile. Requires Excel. Version 1.01. \$79.95. Turner Hall Publishing, 10201 Torre Ave., Cupertino, CA 95014. NCP (Aug '88)

**Mathematica** ★★★★½  
is a powerful tool for doing all kinds of math. Offers arbitrary-precision numeric calculations, symbolic computation, PostScript graphics, and programmability. Version 1.03. Requires 1 megabyte or more and a hard-disk drive. Requires 2 megabytes to run kernel. \$495. \$795 for the Mac II version. Wolfram Research, P.O. Box 6059, Champaign, IL 61821. NCP (Nov '88) ★'88 Eddy

**MathView Professional** ★★★★  
is an equation solver that combines two- and three-dimensional plotting with routines for matrices, differential equations and integrals, complex numbers, and the like. Interface leaves a lot to be desired. Version 1.0. Requires 512KE and two disk drives. Mac II and MultiFinder friendly. \$249.95. BrainPower, 24009 Ventura Blvd., Calabasas, CA 91302. NCP (Sept '88)

**Microsoft Works** ★★★★½  
has been the integrated program of choice for years, and version 2.0 shouldn't change that. Package includes word processing, spreadsheet, database, telecommunications, and object-oriented graphics. Supports color. Excellent value. May be all the software you'll ever need. Version 2.0 reviewed. Requires Mac Plus or higher, two 800K drives. \$295. Microsoft, 16011 N.E. 36th Way, Box 97017, Redmond, WA 98073. NCP (May '89)

**Microtemp Financial Calculators** ★★★★½  
is a set of worksheets for Excel and Works that calculates common personal and small business financial problems. Includes cash flow, real estate and rate of return calculators. Version 1.0. \$79.95. Microtemp, P.O. Box 1208, Santa Rosa, CA 95402. NCP (Aug '88)

**101 Macros for Excel** ★★★★  
offers all the power of macros without having to learn how to write them. Some gems include a macro to transpose rows and columns, and a search-and-replace macro. Requires Excel. \$69.95. MacroPac International, 19855 Stevens Creek Blvd., Cupertino, CA 95014. NCP (July '88)

**Parameter Manager Plus** ★★★★  
is a data manager, incorporating integrated scheduling, statistics, and graphics. Solid spreadsheet, calendar, and database functions. Can import data from Excel or Lotus 1-2-3. \$595. Rebus, 2330-B Walsh Ave., Santa Clara, CA 95051. NCP (July '87)

**Ragtime** ★★★★  
is an "Integrated Page Processor" with text, graphics, and built-in spreadsheet. Flow text automatically from one frame to another. Spreadsheet has a full set of functions. Excellent, easy-to-use program. Requires 512K or more. \$395. Orange Micro, 1400 N. Lakeview, Anaheim, CA 92807. NCP (Aug '88)

**StatView 512+** ★★★★  
is a very intuitive statistical-analysis program with tools to help you understand any set of data. Holds data in a spreadsheetlike form. Full-featured, fast, and accurate. Extremely wide range of analyses possible. Requires 512K or more and 800K of disk space to operate. \$349.95. BrainPower, 24009 Ventura Blvd., Calabasas, CA 91302. NCP (Dec '86)

**StatView II** ★★★★  
is a remarkably complete data-analysis package. Essential for any kind of descriptive, comparative, or multivariate statistics. Works in color on the Mac II. Version 1.01. Requires Mac II or SE equipped with 68020 and 68881 math coprocessor; two 800K disk drives or hard disk. \$495. Abacus Concepts, 1984 Bonita Ave., Berkeley, CA 94704. NCP (Oct '88)

**Trapeze** ★★★★½  
is a powerful presentation worksheet that combines mathematical functions and graphic representation. The interface, which consists of an icon bar, can be awkward to use. Mac II and color supported. Version 2.0. \$395. Access Technology, 555C Heritage Harbor, Monterey, CA 93940. NCP (Dec '87)

**Wingz** ★★★★  
combines a powerful and roomy spreadsheet with an easy-to-use scripting language for developing customized applications. Lacks a few standard spread-



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# MINIFINDERS

sheet niceties such as borders and plane splitting but makes up for it with glitzy graphics, including color and 3-D. Version 1.0. Requires 1 megabyte. \$399. University Edition: \$89. Informix Software, 16011 College Blvd., Lenexa, KS 66219. NCP (June '89)

## Graphics & Design

### Aldus FreeHand 2.0

is a major upgrade. Greatly increased power includes up to 100 levels of undo, autotrace, a blend command for interpolating shapes and colors, and expanded text manipulation. Has a steep learning curve but is relatively easy to use once you've got the hang of it. Version 2.0. Requires 1 megabyte. \$495. Aldus, 411 First Ave. S., Seattle, WA 98104-2871. NCP (June '89)

### Canvas 2.0

is a rich drawing/painting program, featuring full Bezier curves, cutting and joining of polygons, skewing, perspective and distortion, auto-dimensioning, area and perimeter calculation, auto-tracing of bit maps, and full color support. Creates and edits high-resolution bit maps to 2,540 dpi. Slightly less powerful DA version available. Requires 1 megabyte, two 800K floppies. System 6.0. \$299. Deneba Software, 3305 N.W. 74th Ave., Miami, FL 33122. NCP (Apr '89)

### Click & Clip

offers seasonal graphics packages. Of the two quarterly editions released, the Spring '88 package is the better collection. Requires a program that reads Encapsulated PostScript Format (EPSF) files. \$39.95 per edition. Studio Advertising Art, P.O. Box 18432-52, Las Vegas, NV 89114. NCP (Aug '88)

### Comic Strip Factory

is an assembly program for creating comic strips. Includes a database of parts for various characters and backgrounds for panels. Good text editing in balloons. Can import and export in MacPaint format. \$69.95. Foundation Publishing, 5100 Eden Ave., Suite 307, Edina, MN 55436. NCP (Dec '87)

### Cricket Graph

easily generates 12 graph types. Multiple windows can be displayed. Graph prints in up to eight colors with up to 16 patterns. Self-generating macro formatting. Switcher, HFS, LaserWriter, and plotter compatible. \$195. Cricket Software, 40 Valley Stream Parkway, Malvern, PA 19355. NCP (June '86) ★'86 Eddy

### Cricket Presents

is a presentation tool with strong emphasis on graphics. Good master template. Lacks import capability for text. Version 1.0. Requires System 4.2 or later. \$695. Cricket Software, 40 Valley Stream Parkway, Great Valley Corporate Center, Malvern, PA 19355. NCP (Nov '88)

### Crystal Paint

creates an electronic kaleidoscope. It is MacPaint's Brush Mirrors gone wild in a small, simple, yet wonderful application. Does not work in color on Mac II. Multifinder friendly. Requires 512K or more. \$49.95. Great Wave Software, 5353 Scotts Valley Drive, Scotts Valley, CA 95066. NCP (Feb '88)

### Curator

catalogs your art and graphics so it's easy to see what's what and where it is. Supports PICT, TIFF, EPSF, PostScript, MacPaint, and more. Changes creator types. Requires 512K and an 800K drive. \$139.95. Solutions International, 30 Commerce St., Williston, VT 05495. NCP (Sept '88)

### DeskPaint

is a full-blown paint program as a DA. Allows you to spruce up a graphic while in another application. Imports and exports MacPaint and TIFF images. Great for DTP, but not enough features to rival the leaders in paint programs. Zedcor, 4500 E. Speedway, Tucson, AZ 85712-5305. NCP (Mar '88)

### EZ Draft

is a high-level CAD application. Does things usually found only on minicomputer programs. Uses "pop-up" menus to supplement a full set of pull-down menus. Comes with an additional set of printer/plotter/monitor drivers. A real powerhouse. \$1,995. \$500 for IEGS module to link to other CAD programs. Bridgeport Machines, 500 Lindley St., Bridgeport, CT 06606. CP (May '87)

### FastForms! Construction Kit

is both a fast and efficient business forms creator (a drawing program) and a specialized application (and DA) to fill out the data fields in your forms. \$149 (U.S.). Shana Enterprises, Advanced Technology Center #105, 9650-20 Ave. Edmonton, Alberta T6N 1G1, Canada. NCP (Nov '87)

### Fluent Fonts

is a two-disk collection of fonts. Includes 49 different items. All install easily in user systems. Most are well executed and some are extraordinarily nice. This is a real bargain for font lovers. \$49.95. CasadyWare, P.O. Box 223779, Carmel, CA 93922. NCP

### FONtastic Plus

lets you customize and create bit-mapped fonts. Characters are easily added or modified. Version 2.01 edits larger fonts and supports NFNTs. Requires 512K. \$99.95. Altsys Corp., 720 Avenue F, Suite 109D, Plano, TX 75074. NCP (May '89)

### Fontographer

is a complex but excellent laser-font creator. The fonts created have 300 bit-per-inch resolution. The fonts are actually downloadable PostScript files. \$395. Altsys, P.O. Box 865410, Plano, TX 75086. CP

### FontSizer

creates high-quality screen fonts of any downloadable PostScript typeface in

sizes up to 127 points. Excellent utility for producing large font sizes with true WYSIWYG. Requires 1 megabyte, PostScript printer, and fonts. Version 1.7. \$99.95. U.S. MicroLabs, 1611 Headway Circle, Building No. 3, Austin, TX 78754. NCP (Apr '89)

### FreeHand

greatly simplifies the drawing of curves, the use of layers and text handling when manipulating PostScript graphics. And it works in color on the Mac II. Requires 1 megabyte and two disk drives. \$495. Aldus, 411 First Avenue S., Seattle, WA 98104. NCP (Aug '88)

### Illustrator 88

is a professional-level graphics program from the people who defined the PostScript language. Uses templates for precise drawing and detailed artwork. Requires 1 megabyte. \$495. Adobe Systems, 1585 Charleston Road, Mountain View, CA 94039. NCP (Oct '88) ★'88 Eddy

### Image Club

is an overwhelming collection of EPS clip art available on disk and CD-ROM. Comes with a well-designed catalog of images. Requires a program that reads Encapsulated PostScript Format (EPSF) files. \$99. Image Club Graphics, 1902 11th St. SE, Calgary, Alberta, Canada T2G 3G2. NCP (Aug '88)

### ImageStudio

puts a photo-retouching lab on the desktop. Editable brushes let you modify digitized images in 65 gray levels. Version 1.0 reviewed. Requires 1 megabyte or more and two 800K disk drives. Mac II and Multifinder friendly. \$495. Letraset USA, 40 Eisenhower Drive, Paramus, NJ 07653. NCP (June '88)

### Images with Impact!

brings clip art out of the turn-of-the-century woodcut style and into a modern graphic sensibility. "Graphics and Symbols 1" is the first in a series. Requires a program that reads Encapsulated PostScript Format (EPSF) files. \$99.95. 3G Graphics, 11410 N.E. 124th St., Kirkland, WA 98034. NCP (Aug '88)

### Lasertalk

is a PostScript programming tool that establishes interactive contact with laser printers. Preview window and on-line help make it a powerful tool. Requires 1 megabyte or more and a PostScript Printer. \$249. Emerald City Software, P.O. Box 2103, Menlo Park, CA 94026. CP until registered (May '88)

### LetraStudio

is a type-customization program for creating headlines, logos, signs, and other display type. Predefined envelopes let you create unique distortion effects. Works only with LetraFonts, which in turn are accessible only through the program. Version 1.0. Requires 1 megabyte and hard disk. \$495, plus \$75 per font. Letraset USA, 40 Eisenhower Drive, Paramus, NJ 07653. Fonts are copy-protected. (May '89) ★'88 Eddy

### MacCalligraphy

simulates brush painting. User-designed Seals and Touches enable you to design your own signature tool and the style of brush you use. Takes some getting used to. \$175. Qualitas Trading, 6907 Norfolk Road, Berkeley, CA 94705. NCP (Feb '88)

### MacDraft

is an object-oriented graphics program. It sports advanced features such as variable scaling, single-degree rotation, complex arcs, auto dimensioning, and variable zoom/reduction. \$269. Innovative Data Design, 2280 Bates Ave., Concord, CA 94520. NCP (Feb '86)

### MacDraw II

updates the venerable object-oriented draw program. Adds dithered and color patterns in its own documents, but doesn't support color in the PICT II format. Version 1.0. Requires 1 megabyte, and two 800K disk drives or hard disk. \$395. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP (Nov '88)

### MacGraphics

is an overwhelming collection of bit-mapped clip art—13 thematic disks containing 10 megabytes of art. Unfortunately, most pictures are full-page, and reproduction quality suffers when they are reduced. Version 3.0 reviewed. \$225. GoldMind Publishing, 12155 Magnolia Ave., Suite 3-B, Riverside, CA 92503. NCP (Jan '89)

### MacPaint

hasn't lost its shine after all these years. Version 2.0 supports multiple windows, design templates, and a magic eraser for corrections. It lacks free rotation or distortion talents. Requires 512K and second disk drive. \$125. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP (July '88) ★'85, '87 Eddy

### MapMaker

is a digital cartographer that charts demographic and marketing information on a geographic basis. Wide variety of maps available — some at an additional cost. Version 3.0. Requires 512K. \$349. Select Micro Systems, 40 Triangle Center, Yorktown Heights, NY 10598. NCP (Dec '88)

### MGMS: Professional CAD for Macintosh

offers more than 200 functions. Very complete, capable program. Groups, Dimension, and Libraries are standard. Sometimes confusing — designed for the experienced, professional CAD user, not the novice. Full plotter support. 512K or more. \$799. Micro CAD/CAM, 5900 Sepulveda Blvd., Suite 340, Van Nuys, CA 91411. NCP (Nov '87) ★'87 Eddy

### Modern Artist 2.0

is still an interesting color paint program and has added a few new features, but there's not enough here to justify the substantial price increase. Requires Macintosh II. \$495. Computer Friends, 14250 N.W. Science Park Drive, Portland, OR 97229. NCP (Feb '89)



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# MINIFINDERS

## Persuasion

is an outstanding presentation tool with an excellent drawing environment. Extensive auto-templates and color schemes as well as multiple master slides make it easy to turn out presentations quickly. Requires Apple System 4.1 or higher, 1-megabyte Mac Plus or higher, and a hard disk. Version 1.0 reviewed. \$495. Aldus, 411 First Ave. S., Seattle, WA 98104. NCP (May '89) ★88 Eddy

## Photon Paint

is not the equal of Studio/8 or PixelPaint, but it does offer a workable painting environment, multiwindow capability, some interesting special effects, and a lower price. Version 1.1 reviewed. Requires Mac II with color card. \$299.95. Microlutions, 17408 Chatsworth St., Granada Hills, CA 91344. NCP (May '89)

## PictureBase

is a powerful graphic librarian. You can store paint and PICT formatted items and attach keywords for later search and retrieval. \$69.95. Symmetry, 761 E. University Drive, Mesa, AZ 85203. NCP (Sept '87) ★86 Eddy

## Pixel Paint

is a color paint program with customizable palettes and a lot of special effects. Slow Open and Save. Requires Mac II, 2 megabytes, and 8-bit video card. \$495. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. NCP (May '88)

## PowerPoint

is an easy-to-use desktop presentation tool. Good color schemes. Can send presentations to Genographics to produce color 35mm slides. Version 2.0. Requires System 4.1 or later, 1 megabyte, and two 800K drives or hard disk. \$395. Microsoft, 16011 N.E. 36th Way, P.O. Box 97017, Redmond, WA 98073-9717. NCP (Aug '87)

## The Print Shop

makes it easy to create greeting cards, signs, banners, and letterhead. Uses its own special graphics and can import Paint files. Hard-disk users get version 1.02 or later. \$79.95. Broderbund, 17 Paul Drive, San Rafael, CA 94903-2101. CP (Sept '87)

## StandOut!

is a presentation program built like a publishing program, with strong text and graphics support. Automatic text flow around graphic objects. Lacks good graphic examples. Version 1.0. Requires 1 megabyte and two 800K drives or hard disk. \$395. Letraset, 40 Eisenhower Drive, Paramus, NJ 07652. NCP (Nov '88)

## Studio/8

is a professional-level color paint application for the Mac II. Superior tool set, elegant interface, excellent performance and speed. Version 1.0. Requires Mac II and hard disk; 2 megabytes of RAM recommended. \$495. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. NCP (Jan '89) ★88 Eddy

## SuperPaint

is a powerful, easy-to-use graphics program with all the best features of MacPaint and MacDraw — and then some. LaserBits provides 300-dpi magnification, and there are 40 editable brush shapes. Requires 512K or more. \$149.95. Silicon Beach Software, 9580 Black Mountain Road, P.O. Box 261430, San Diego, CA 92126. NCP (Feb '87) ★87 Eddy

## Super 3D

is a high-power 3-D modeling program with an excellent integrated interface. Powerful time-saver. Features include animation, import/export of 3-D worlds as text files. Excellent for art, design, or technical work. Version 1.0. Requires 1 megabyte. \$295. Silicon Beach Software, 9580 Black Mountain Road, P.O. Box 261430, San Diego, CA 92126. NCP (Jan '88)

## Swivel 3D

quickly forms shaded solids in full color. Casts true shadows onto other objects and can project color graphics onto solids. Objects can be linked as jointed and sliding mechanisms that can be operated without accidental dismantling. It can tween-animate objects or fly your view through a scene, saving frames for playback. Superb object-manipulation interface. Version 1.0. Requires 1 megabyte, Mac Plus, two 800K floppy drives. \$395. Paracomp, 123 Townsend St., Suite 310, San Francisco, CA 94107. NCP (Mar '89)

## TrueForm

takes a scanned image of a paper form and turns it into an electronic equivalent, complete with fields for entering data. It can automatically sum numeric fields. Requires external 800K drive. \$495; run-time version, \$295. Spectrum Digital Systems, 2702 International Lane, Madison, WI 53704-3122. NCP (May '88)

## VersaCAD

is a powerful CAD program that doesn't show any of its MS-DOS roots. Excellent element manipulation, full plotter support. Library user interface is crude. Requires 1 megabyte or more. \$1,995. VersaCad, 2124 Main St., Huntington Beach, CA 92648. NCP (July '88) ★88 Eddy

## VideoWorks II

is an easy-to-use animation tool — the best available on the Mac. Has an Overview mode that acts as a slide show carousel for presentations. Works in color on the Mac II. \$195. Requires 1 megabyte or more and an 800K drive. MacroMind, 1028 W. Wolfram, Chicago, IL 60657. NCP (Mar '88) ★85, '87 Eddy

## VideoWorks II Accelerator

compiles VideoWorks II movies to make them run more smoothly. Compensates for the QuickDraw screen display. Version 1.0. Requires 1 megabyte, VideoWorks II; hard-disk drive recommended. \$195. MacroMind, 1028 W. Wolfram, Chicago, IL 60657. NCP (Dec '88)

## VideoWorks II Clip Animation

Clip Charts, Black and White Movies, and Clip Sounds are four separate aids to

help you construct movies and business presentations. Requires VideoWorks II. \$49.95 to \$59.95. MacroMind, 1028 W. Wolfram, Chicago, IL 60657. NCP (Aug '88)

## WebPaint

consists of two three-disk volumes of very high-quality clip art. Also includes the Art Roundup DA, a good art browser/editor. Volume 1 or 2, \$39 each; both volumes, \$59. Available in PictureBase format for \$15 extra per volume. Dubl-Click Software, 18201 Gresham St., Northridge, CA 91325. NCP (Sept '87)

## World-Class Fonts!

comes in two volumes of three disks each. Includes all the Mac the Knife fonts and a lot more, including two useful utilities. This is now the best collection of ImageWriter fonts available. Each volume: \$39; both volumes: \$59. Dubl-Click Software, 18201 Gresham St., Northridge, CA 91325. NCP (Dec '86)

## Desktop Publishing

### DTP Advisor

combines a HyperCard-based tutorial on publishing with a project-management system. Beautifully designed but better off as a book. Requires 1 megabyte and HyperCard 1.2. Version 1.0. \$79.95. Broderbund Software, 17 Paul Drive, San Rafael, CA 94903-2101. NCP (Apr '89)

### Interleaf Publisher

is a speedy multiuser layout system for producing large, complicated documents. Version 3.5 has an improved user interface, but it still suffers from poor font management. Requires Mac II with 5 megabytes of RAM and hard disk. \$2,495. Interleaf, 10 Canal Park, Cambridge, MA 02141. NCP (Apr '89)

### KeyCap Fonts

contains three typefaces designed specifically for writing computer documentation. Version 1.0. \$149.95. Paperback Software International, 2830 Ninth Street, Berkeley, CA 94710. NCP (June '89)

### LetrTuck

lets you add, delete, or modify the kern pairs for any installed font. Version 1.04. Requires 512K or later. \$149. EDCO Services, 12410 N. Dale Mabry Highway, Tampa, FL 33618. NCP (June '89)

### MacTeX

is the TeX environment of choice for hard-core TeX users on the Macintosh. Very intimidating for others. Painfully slow and visually unattractive. Version 2.0. Requires 1 megabyte or more. \$750. FTL Systems, 234 Eglinton Ave. E., Toronto, Ontario M4P 1K5, Canada. NCP (Apr '88)

### PageMaker

retains its pasteup approach to page layout. New features include automatic text flow, style sheets, and spot color support. The standard keeps getting better. Version 3.0. Requires 1 megabyte or more and a hard disk. \$595. Aldus, 411 First Ave. S., Seattle, WA 98104. NCP (Aug '88) ★85, '87, '88 Eddy

### Publishing Packs

bundle together three Adobe typefaces that work well for a particular publishing project. The packages offer substantial savings over purchasing the typefaces individually, and the documentation has useful information on typeface characteristics. Newsletters, \$395; Forms & Schedules, \$475; Presentations, \$475. Adobe Systems Inc., 1585 Charleston Road, Box 7900, Mountain View, CA 94039. NCP (Feb '89)

### QuarkStyle

is a collection of 72 designer-created templates for "instant" desktop publishing. The templates, which cover the gamut from business cards to newsletters, let you concentrate on a page's contents rather than its appearance. Version 1.0. Requires 1 megabyte and hard disk. \$295. Quark, 300 S. Jackson, Suite 100, Denver, CO 80209. NCP (Feb '89)

### QuarkXPress

is a powerful page-layout program, with 24-bit color, style sheets, and search and replace of text attributes. Also does four-color separations. Layout is done using text and picture boxes, which improves control but is difficult to master. Version 2.0. Requires more than 1 megabyte as well as a hard disk. \$795. Quark, 300 S. Jackson, Suite 100, Denver, CO 80209. CP until registered. (Jan '89)

### Ready, Set, Go!

combines an elegant interface with a powerful word processor, style sheets, fine-tuned typography, thumbnail views, gray-scale editing, and spot color. It's one of the first programs to store font information with documents, thus avoiding font ID conflicts. Version 4.5. Requires 1 megabyte; hard disk recommended. \$495. Letraset USA, 40 Eisenhower Drive, Paramus, NJ 07653. NCP (June '89) ★86 Eddy

### Springboard Publisher

combines page layout, word processing, and graphics capabilities in one easy-to-learn program. Too limited for serious desktop publishing but cost-effective for simple documents. Version 1.06 reviewed. Requires 1 megabyte. \$199.95. Springboard Software, 7808 Creekridge Circle, Minneapolis, MN 55435. NCP (May '89)

### TeXtues

is an implementation of TeX, the big daddy of typesetting programs. Good for people trained on mainframes in the early days. Otherwise very sticky with a high learning curve. Version 1.0. Requires 512K or more. \$495. Blue Sky Research, 534 S.W. Third Ave., Portland, OR 97204. NCP (Apr '88)



## MINIFINDERS

### UltraSpec

performs copy-fitting chores such as calculating copy length, creating dummy pages, and producing printer specs. Version 1.0. Requires HyperCard and 1 megabyte. \$129.95. SoftStream, 19 White Chapel Drive, Mount Laurel, NJ 08054. NCP (June '89)

### Communications

#### AppleShare

is the file sharer marketed by Apple. Software-based. AppleShare requires you to dedicate a Mac and a hard disk to run it. Allows users on the network to protect things from other users on the folder level. Interface to network is provided at a revised Finder. \$799. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (May '87)

#### ComServe

allows you to share a Hayes-compatible modem over an AppleTalk network. You can call out, but you can't call in. Works with most telecommunications packages. \$195 per server. Infosphere, 4730 S.W. Macadam Ave., Portland, OR 97201. CP (Feb '88)

#### Desktop Express

is a simple-to-use, semiautomated program for using MCI Mail and Dow Jones News/Retrieval. Performance is traded off for ease of use. Requires 512K or more. \$149. Dow Jones, P.O. Box 300, Princeton, NJ 08543. NCP (Jan '88)

#### inBox

is an easy-to-use mail system. It's called up from a DA. Has a very slick interface. Dedicated Mac not required. \$350 for starter set, which includes one Administrator disk and three Connection disks. Additional Connections cost \$125 each. TOPS, 950 Marina Village Parkway, Alameda, CA 94501. NCP (May '87) ★'86 Eddy

#### inTalk

comes with its own communications command language able to do unattended sessions. Supports Xmodem and MacBinary. Has a macro key function. Many sample setup documents and command language files provided. \$195. Palantir, 12777 Jones Road, Houston, TX 77070. NCP (Prem)

#### LapLink Mac

quickly transfers data to and from the MS-DOS and Mac environments. Kit contains a cable and software. Control of transfer is on the IBM side. Version 1.2. Requires 512K. \$139.95. Traveling Software, 19310 North Creek Parkway, Bothell, WA 98011. NCP (Aug '88)

#### MacTerminal

provides basic telecommunications and terminal emulation. Has neither macros nor any sort of auto redial/auto log-on capability. Best for those needing faithful VT100 or IBM 3278 emulation — it is superb at those. \$125. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (Prem)

#### MacWorkStation

is a development environment and communications program that accesses custom mainframe applications through the Macintosh interface. Modular design allows for expandability. Mac II and MultiFinder friendly. Version 3.0. \$2,500 for internal use license; \$5,000 for commercial use license. Apple Software Licensing, 20525 Mariani Ave., Cupertino, CA 95014. NCP (Oct '88)

#### MicroPhone II

is a high-powered terminal program that's easy enough for novices. Very powerful command language allows full automation of communications if desired. \$295. Software Ventures, 2907 Claremont Ave., Berkeley, CA 94705. NCP (Jan '89) ★'86 Eddy

#### Microsoft Mail

is an electronic mail system that runs under AppleTalk. Supports file transfers across the mail system. Full on-line help facility. Also includes "While you were out" messages. Desk accessory-based. Prices determined by number of users licensed. One to four users, \$299.95; five to ten users, \$499.95; 11 to 20 users, \$749.95; 21 or more users, \$949.95. Microsoft, 16011 N.E. 36th Way, Redmond, WA 98073-9717. NCP (May '87) ★'87 Eddy

#### PC MacTerm/pcAnywhere III

are two programs that work together to take control of an MS-DOS machine from the Mac keyboard. Versions: PC MacTerm 1.1; pcAnywhere III 3.0. Requires 512K; System 4.1 or later; 128K IBM PC compatible and MS-DOS 2.1 or later. PC MacTerm, \$99; pcAnywhere III, \$145. Dynamic Microprocessor Associates, Inc., 60 E. 42nd St., New York, NY 10165. NCP (Jan '89)

#### Red Ryder

is a full-featured telecommunications program that supports MacBinary, Xmodem, and Kermit. Has big-screen support, auto procedure creator, and up to 30 keyboard macros. Version 10.3 reviewed. \$80. Freesoft, 150 Hickory Drive, Beaver Falls, PA 15010. NCP (Jan '89) ★'87 Eddy

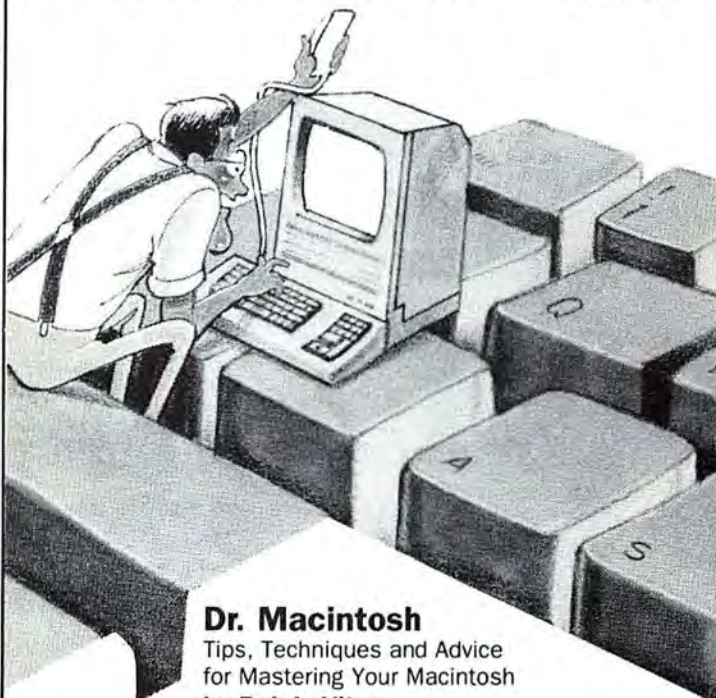
#### Smartcom II

balances power and ease of use. Capable of unattended operation and has a powerful command language. The fastest screen updating available can keep up even at 9,600 baud. The large-screen buffer can easily be archived. Version 3.0 reviewed. \$149. Hayes, 5923 Peachtree Industrial Blvd., Norcross, GA 30092. NCP (Jan '89) ★'85 Eddy

#### SoftPC

puts an IBM PC XT inside your Mac without cracking the case to add any special coprocessor boards. The emulation of an MS-DOS machine is done entirely in the software. Version 1.2. Requires Mac II or SE equipped with 68020

# Take the Doctor's Advice.



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# MINIFINDERS

accelerator card; 2 megabytes of RAM. \$595. Insignia Solutions, 1255 Post St., Suite 625, San Francisco, CA 94109. NCP (Nov '88)

**TOPS** ★★★★½  
is a file server designed to network computers with different operating systems. Supports Macs, MS-DOS compatibles, and UNIX. Access to files and subdirectories is transparent to the user; they appear as Mac folders. Only handles ASCII or Text files. \$249 for Mac version. TOPS, 950 Marina Village Parkway, Alameda, CA 94501. Serial number protected. (May '87) ★ 87 Eddy

**VersaTerm-Pro** ★★★★½  
is a very powerful terminal program with several special features. Does one of the best VT100 emulations available and specializes in high-quality Tektronix 4014 and 4105 emulation. A pro's tool. Requires 512K or more. \$295. Peripherals, Computers & Supplies, 2457 Perkiomen Ave., Mount Penn, PA 19606. NCP (Apr '87)

## Word Processors

**ArciText** ★★★★  
is a text processor with many hypertext capabilities as well as the ability to include graphics. "Nodes" of text are accessed by means of different "maps." Very powerful. Version 1.0 reviewed. Requires 1 megabyte. \$349.95. Brainpower, 24009 Ventura Blvd., Suite 250, Calabasas, CA 91302. NCP (Feb '89)

**Document Compare** ★★★★  
allows users to compare any two MacWrite 4.5, ASCII, or MDS documents. Differences in spelling, punctuation, formatting, and wording are detected. Documents can be printed out with differences highlighted. \$99. Legalware, 33 Young St., Toronto, Ontario M5E 1S9, Canada. NCP (May '86)

**Document Modeler** ★★★★½  
can automate much of a professional office's correspondence. Comes in two parts: Template Maker and Document Maker. Initial setup requires time and is complex. \$299.95. Legalware, 33 Young St., Toronto, Ontario M5E 1S9, Canada. NCP (Mar '87)

**Doug Clapp's Word Tools** ★★★★  
is a useful punctuation and style-editing program. It won't turn you into a Proust, but it will help you make your writing cleaner and clearer. Word counts among different formats show discrepancies, but not to worry. Requires 512K or more. \$79.95. Aegis Development, 2125 Pico Blvd., Santa Monica, CA 90405. NCP (Sept '87)

**Expressionist** ★★★★  
is a powerful DA that allows you to create complex mathematical equations from within an application. Equation manipulation has never been easier. \$79.95. Allan Bonadio Associates, 1579 Dolores St., San Francisco, CA 94110. NCP (July '87)

**Feima** ★★★★½  
allows users to create their own Chinese characters. This Chinese word processor follows the Mac interface more closely than Brushwriter. Lets you create your own characters for those that aren't included in the dictionary. Version P reviewed. Requires 512K or higher. \$585. Wu Corp., P.O. Box 699, Avon, CT 06001. CP (May '89)

**FullWrite Professional** ★★★★  
combines outlining and word processing with page layout and drawing. Its many features translate into sluggish performance unless you have a lot of extra RAM. Impressive. Version 1.0. Requires 1 megabyte. Mac II and MultiFinder friendly. \$395. Ashton-Tate, 20101 Hamilton Ave., Torrance, CA 90502. NCP (Sept '88)

**Graham Speller** ★★★  
is a DA-based spelling checker. Includes macro feature. Good guesser in interactive mode. Clumsy interface. Version 1.1. \$44.95. Graham Software, 8609 Ingalls Circle, Arvada, CO 80003. NCP (Sept '88)

**Kadmos Greek Font** ★★★★½  
is a full character set of ancient Greek that prints on any PostScript printer. Requires learning new typing skills, but excellent quality makes it worth the effort. \$85. Allotype Typographics, 1600 Packard Road, Ann Arbor, MI 48104. NCP (Oct '87)

**Kaihin Brushwriter** ★★  
is a Chinese word processor that fails to support the Mac interface. It has 8,000 characters. You must speak Chinese to use this program. Won't work with System 6.0. Version 2.0 reviewed. Requires 1-megabyte SE or higher, adapter (included) to save and print files. \$599 for professional package (reviewed). Pacific Rim Connections, 3030 Atwater Drive, Burlingame, CA 94010. NCP (May '89)

**Liberty Spell Checker** ★★★★½  
is a fast, effective, interactive checker. The dictionary is smaller than average but well chosen. Unfortunately, it has a few misspelled words. \$59.95. DataPak, 14011 Ventura Blvd., Sherman Oaks, CA 91423. CP (Oct '86)

**Lookup** ★★★★  
is an on-call, quick, single-word spelling checker. Designed for the way writers really work. Uses the 93,000-word Spellswell dictionary. \$49.95. Working Software, P.O. Box 1844, Santa Cruz, CA 95061-1844. NCP (Dec '87)

**MacProof** ★★★★½  
is a grammar, style, and spelling checker that's like having your own personal copy editor. Grammar rules are fixed, and you may not agree with the choices. The program only suggests corrections: it doesn't make them for you. And the

checking process can be slow if your document is long. \$195 for stand-alone version; \$2,500 for networked version. Automated Language Processing Systems, 190 W. 800 North, Provo, UT 84604. NCP (Apr '87)

**Macspell+** ★★★★  
is a spelling checker that installs as a DA. Works easily with MacWrite 4.5 and 2.2 and Word but has some drawbacks. New version 1.10 just available. Requires 512K or more, two drives or hard disk. \$99. Creighton Development, 16 Hughes St., Irvine, CA 92718. NCP

**MacWrite** ★★★  
is starting to show its age. While still a good, basic program, it's outperformed by its competition. Probably enough for the occasional user. Version 5.0 includes Command-key equivalents and spelling checker. Requires 512KE or higher. \$125. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP (June '88) ★ 85 Eddy

**MergeWrite** ★★★★½  
is a mail-merge program for MacWrite (also works with ASCII files). Program combines names and addresses from a data file into predefined fields in a form letter. Also allows simple conditional IF-THEN-ELSE equations. \$49.95. Software Discoveries, 137 Krawski Drive, South Windsor, CT 06074. NCP (Dec '87)

**MindWrite** ★★★★  
integrates outlining and word processing better than anyone. Version 1.1 fixes many problems of the earlier version. Sophisticated search and select options. Unimpressive speed. \$295. Access Technology, 555C Heritage Harbor, Monterey, CA 93940. NCP (Feb '88)

**Mishu** ★★★★½  
is a DA that turns MacWrite and Microsoft Word into a Chinese word processor. It will also work with Cricket Draw, HyperCard, or any program that reads PICT files. You must use MacWrite 3.5 or later and Word 3.0 or later. Version 2.1 reviewed. Requires 512K or higher. \$89. Xanatech, 20 Fresh Pond Place, Cambridge, MA 02138. NCP (May '89)

**QUED/M** ★★★★½  
is an excellent text editor that saves documents in a form readable by most computers and printers. Doesn't support graphics or multiple fonts. Programming language allows creation of database. Version 2.01. \$129. Paragon Concepts, 4954 Sun Valley Road, Del Mar, CA 92014. NCP (Mar '88)

**QuickLetter** ★★★★½  
is a well-designed and thoughtfully implemented DA for the creation of letters and envelopes. You can create stationery, complete with graphics, and maintain an address book including salutations. It's the best envelope creator/printer in any word processor. Version 1.0. Requires 512K or more. \$124.95. Working Software, P.O. Box 1844, Santa Cruz, CA 95061-1844. NCP (Apr '89)

**Scriptor** ★★★★½  
is designed for producing standard-format scripts. Starts with a Word document. As you change your Word document, Scriptor will reformat, renumber, and reprint the script. Supports LaserWriter and daisywheel printers. \$295. Screenplay Systems, 348 E. Olive Ave., Suite F, Burbank, CA 91502. NCP (May '87)

**Sensible Grammar** ★★★  
corrects some of the more glaring errors that writers make. Also analyzes the word count and structure of sentences to come up with a readability rating. Slow. Version 1.1d. Requires 512K. \$99.95. Sensible Software, 335 E. Big Beaver, Suite 207, Troy, MI 48063. NCP (Dec '88)

**Spelling Champion** ★★★★  
is a fast and accurate batch-type spelling checker. Backup feature allows you to undo corrections in a paragraph. Works only with MacWrite 4.5. \$39.95. Champion Software, 6617 Gettysburg Drive, Madison, WI 53705. NCP (Oct '86)

**Spelling Coach Professional** ★★★★½  
is a DA and stand-alone spelling checker as well as a thesaurus. Includes dictionary definitions. Off-the-wall phonetic guesses. Version 3.0. \$195. Deneba Software, 7855 N.W. 12th St., Suite 202, Miami, FL 33126. NCP (Sept '88)

**Spellswell** ★★★★½  
is a stand-alone batch spelling checker. Also checks for punctuation and other errors. Good dictionary, thorough checking, simple interface. Weak guessing. Version 2.0. \$74.95. Working Software, P.O. Box 1844, Santa Cruz, CA 95061-1844. NCP (Sept '88) ★ 86 Eddy

**Thunder!** ★★★★½  
is a DA spelling checker. Includes macro features. Fairly fast, good guessing of misspelled words. Small dictionary. MultiFinder hostile. Version 1.1. \$49.95. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. NCP (Sept '88)

**Word Finder** ★★★★½  
is an electronic thesaurus that won't replace your trusty Roget's but is still useful for checking synonyms on the fly. Large, respectively. Version 2.0. Requires 512K. Mac II and MultiFinder friendly. \$59.95. Microlytics, 300 Main St., Rochester, NY 14445. NCP (Sept '88)

**Word 3.02** ★★★★½  
is the most feature-laden word processor around. Also has Microsoft's somewhat unusual view of what the Mac interface is. Esoteric Command-key combinations. Requires 512K or more. \$395. Microsoft, 16011 N.E. 36th Way, Redmond, WA 98073. NCP (Mar '88)

**WordPerfect** ★★★★½  
is a good choice for offices needing compatibility but not so hot otherwise. Good internal file-management system and macro-maker. Uses hidden for-



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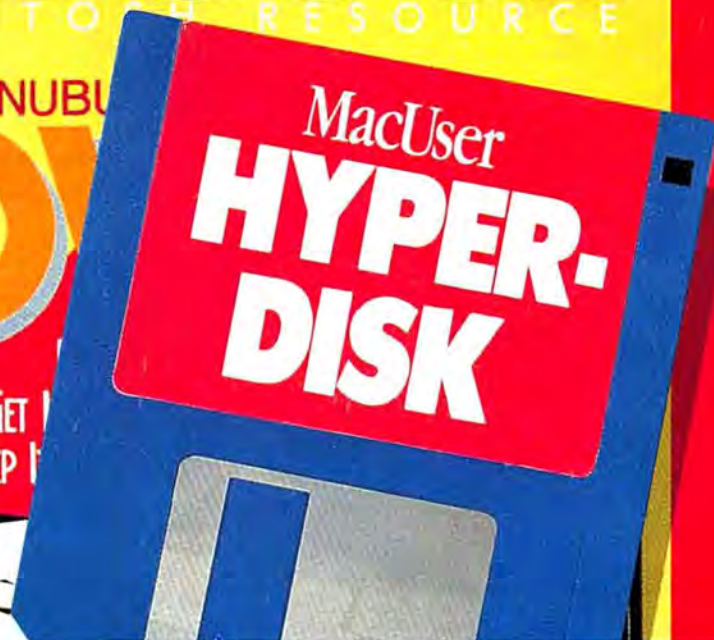
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# MINIFINDERS

matting codes, hierarchical menu system. Requires Mac 512KE, System 4.1 or later. Two 800K disk drives or a hard disk recommended. Not fully compatible with System 6.0. \$395. WordPerfect, 1555 N. Technology Way, Orem, UT 84057. NCP (Feb '89)

**WorksPlus Spell** ★★★★½  
is a speedy spelling and hyphenation checker for Microsoft Works. It includes a glossary for abbreviations and time/date stamping. The biggest drawback is its limitation to one program. \$59.95. Lundeen & Associates, P.O. Box 30038, Oakland, CA 94604. NCP (Oct '87) ★'87 Eddy

**Write** ★★★  
is a "beginner's" version of Word 3.0. More features than some word processors in its class, but not all of the features work well. Poor value and an expensive upgrade path to Word. \$175. Requires 512K or more. Microsoft, 16011 N.E. 36th Way, P.O. Box 97017, Redmond, WA 98073-9717. NCP (May '88)

**WriteNow for the Macintosh** ★★★★½  
has many of the features of MacWrite and then some, including the ability to work in columns. Has built-in spelling checker with 50,000-word dictionary. \$175. T/Maker, 1973 Landings Drive, Mountain View, CA 94043. NCP (Mar '87) ★'88 Eddy

## HyperCard

**Business Class** ★★★★½  
is a HyperCard stack that contains world travel information and itinerary planning. Uses maps to locate countries of interest, but it lacks United States domestic travel information. Requires 1 megabyte or more and HyperCard. \$49.95. Activision, 3885 Bohannon Drive, Menlo Park, CA 94025. NCP (Mar '88)

**City to City** ★★★★  
imparts travel information on 31 U.S. cities including details on hotels, restaurants, and nightlife. Helps plan an itinerary. Requires HyperCard, two disk drives, and a printer. \$49.95. Activision, 3885 Bohannon Drive, Menlo Park, CA 94025. NCP (Sept '88)

**Focal Point II** ★★★★½  
is a major upgrade to Focal Point, an organizational HyperCard stack. Offers an electronic-mail system and a Task Manager module in addition to greater print options. Retains the 16 original modules, including calendar, phone log, and client accounts. Requires 1 megabyte, hard disk, and HyperCard 1.2.1 or later. \$199.95. TenPointO, 3885 Bohannon Drive, Menlo Park, CA 94025. NCP (Apr '89)

**HyperAnimator** ★★★★  
enables you to create talking heads for your HyperCard stacks, using MacinTalk or digitized sound resources. Easy to implement, especially if you know HyperCard well. Version 1.5. Requires 1 megabyte. \$149.95. Bright Star Technology, 14450 N.E. 29th, Suite 220, Bellevue, WA 98007. NCP (Feb '89)

**HyperAtlas** ★★★★  
is a collection of U.S. and world maps that are networked to stacks containing economic, political, and population data. Version 1.0. Requires HyperCard and second disk drive or hard disk. \$99. MicroMaps Software, P.O. Box 757, Lambertville, NJ 08530. NCP (Oct '88)

**HyperCard** ★★★★  
is a unique program for the Mac. It uses an index-card metaphor, and it contains a programming language, HyperTalk. Requires 1 megabyte or more. Free with new Macs and bundled with many HyperCard stacks, otherwise \$49.95. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (Dec '87) ★'87 Eddy

**HyperDA** ★★★★  
lets you browse through HyperCard stacks through a DA. A true equalizer for 512K Mac owners who cannot normally access stackware. Doesn't support global variables. Requires 512K or more. \$69. Symmetry, 761 E. University Drive, Mesa, AZ 85203. NCP (May '88)

**HyperTutor** ★★★★½  
is a stack that teaches HyperTalk, HyperCard's programming language. Uses an interactive Test Mac on each card to write scripts. A variety of windows makes it good for both beginners and advanced programmers. \$49.95. Channelmark, 2929 Campus Drive, San Mateo, CA 94403. NCP (Apr '88)

**Macintosh Bible: STAX Edition!** ★★★★  
is the HyperCard version of the first edition of The Macintosh Bible. Covers system software, applications, hardware, and consumer advice. Requires 1 megabyte, two 800K floppy-disk drives (hard disk recommended), and HyperCard. \$79.95. STAX!, 8008 Shoal Creek Blvd., Austin, TX 78758. NCP (Mar '89)

**101 Scripts and Buttons for HyperCard** ★★★★½  
is a collection of scripts, buttons, fields, graphics, utilities, XCMDs, XFCNs, icons, cursors, and more to be used in creating HyperCard stacks. Version 1.1. Requires 1 megabyte, hard disk, and HyperCard. \$69.95. Individual Software, 125 Shoreway Road, Suite 3000, San Carlos, CA 94070-2704. NCP (June '89)

**Reports** ★★★★½  
endows HyperCard stacks with the power to sort and impart information like a database. Customizing reports is difficult. Requires HyperCard. \$99.95. Activision, Inc., 3885 Bohannon Drive, Menlo Park, CA 94025. NCP (Aug '88)

**ScriptExpert** ★★★★  
helps you generate HyperTalk scripts by leading you through the correct use of the language. Select a common command, and dialog boxes prompt you for

necessary components. Version 1.0. Requires HyperCard. \$79.95. Hyperpress Publishing, P.O. Box 8243, Foster City, CA 94404. NCP (Oct '88)

**VideoWorks II HyperCard Driver** ★★★★½  
lets you play movies directly from a stack. One way to add color animation to HyperCard. Version 1.0. Requires 1 megabyte, VideoWorks II, and HyperCard; hard-disk drive recommended. \$99.95. MacroMind, 1028 W. Wolfram, Chicago, IL 60657. NCP (Dec '88)

**Xiphias Time Table of Science and Innovation** ★★★★½  
presents events from the history of technology on a HyperCard-based CD-ROM. Text, graphics, and sound are nicely integrated, and related events are well linked. Includes HyperCard on CD-ROM. Version 1.0. Requires 1 megabyte. \$150. Xiphias, 13464 Washington Blvd., Marina Del Rey, CA 90292. NCP (May '89)

## Organizational Tools

**Acta** ★★★★½  
is an outline processor in DA format. It has practically all the power of a stand-alone program, and then some. Can save files as Acta outlines, MacWrite files, or text files. Version 2.0. \$79. Symmetry Corporation, 761 E. University Drive, Mesa, AZ 85203. NCP (Oct '88)

**Comment** ★★★★  
is an electronic version of Post-it Notes. A mini word processor lets you attach notes to a spreadsheet cell, to words in a text document, or to a window on the desktop. Version 2.0. Requires 512KE. \$99.95. Deneba Software, 3305 N.W. 74th Ave., Miami, FL 33122. NCP (Dec '88)

**Design** ★★★★½  
is a powerful organizational tool. It goes beyond mere flowcharting. Graphically depicts relationships between systems. Complex, detailed program aimed at software pros. \$250. Meta Software, 150 Cambridge Park Drive, Cambridge, MA 02140. NCP (Apr '88)

**FamilyCare** ★★★★  
is a handbook to childhood diseases. The rule-based expert system gives advice based on symptoms. Ailments and diseases run the gamut from acne and appendicitis to wheezing and yeast infections. Lacks graphics. Version 1.0. Requires 512K. Mac II and MultiFinder friendly. \$99. Lundin Laboratories, 29451 Greenfield Road, Southfield, MI 48076. NCP (Sept '88)

**FlowMaster** ★★★★  
charts your ad dollars in print, TV, billboard, and other mediums. Analyzes cost/benefit of a campaign in terms that even jaded Mad. Ave. execs will find innovative. Includes bar-chart and tabular output. Requires 512K or more. \$495. Select Micro Systems, 40 Triangle Center, Yorktown Heights, NY 10598. NCP (Jan '88)

**For the Record** ★★★★  
is a database specifically designed for legal, financial, and personal records. Allows password locking of screens containing sensitive personal data. Version 1.0 reviewed. Requires 512KE. \$49.95. Nolo Press, 950 Parker St., Berkeley, CA 94710. NCP (Feb '89)

**FormSet: Business Forms Edition** ★★★★  
brings a wealth of business forms, such as expense reports and profit/loss statements, into the electronic arena. Fields are automatically calculated. Can't be customized beyond adding logo. Version 1.0. Requires 512KE and two 800K floppy drives or hard disks. \$95. SoftView, 4820 Adhor Lane, Suite D, Camarillo, CA 93010. NCP (Jan '89)

**GeoQuery** ★★★★  
puts your database on the map by accessing zip code information. Comes with maps of the U.S. Other atlases available. Version 1.0 reviewed. Requires 1 megabyte or more and second disk drive. \$349. Odesta, 4084 Commercial Ave., Northbrook, IL 60062. NCP (July '88)

**Guide** ★★★★½  
allows you to cross-reference from within a document using hypertext. You can set up words or sections of the document so that double-clicking brings up explanatory material, graphics, and other useful items. The word processing and formatting functions, however, are limited. \$135. OWL International, 14218 N.E. 21st St., Bellevue, WA 98007. NCP (Apr '87)

**Inspiration** ★★★★  
has flowcharting tools that let you free-associate ideas visually, then automatically dump the flowchart into a text outline. Version 1.0. Requires 512KE drive. \$149. Ceres Software, 9498 S.W. Barbur Blvd., Suite 103, Portland, OR 97219. NCP (Dec '88)

**Instant Expert** ★★★★½  
is an excellent way to learn the mechanics of creating an expert system. The inference engine (that ultimately finds the answer) is visible. Lacks a true Mac interface. Version 1.0. \$49.95. Human Intellect Systems, 1670 S. Amphlett Blvd., Suite 326, San Mateo, CA 94402. NCP (Jan '88)

**MacProject** ★★★★  
allows a user to plan and track a project from beginning to end. Uses CPM to produce schedules with start and finish dates for each task. Can report on resource interdependencies and generate all needed printed reports. \$195. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP (Mar '86)

**MacSchedule** ★★★★  
is a simple scheduling program with substantial intelligence built into it, making the creation and maintenance of schedules nearly painless. Produces Gantt



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charts only (no PERT or CPM). Version 1.0 reviewed. Requires 512K or higher. \$195. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (May '89)

**MacSMARTS** ★★★★  
can create small, stand-alone expert systems. Features hypertext connections to MacPaint, PICT, SYLK, and text files. Still a little buggy. Version 1.03. Requires 512K or more. \$149.95. Cognition Technology, 55 Wheeler St., Cambridge, MA 02138. NCP (Jan '88)

**MORE II** ★★★★  
is an outlining and organizational tool that is a big improvement over its predecessors, MORE and ThinkTank. It has on-screen capabilities well beyond its competitors', especially in multimonitor setup. \$395. Requires Apple System 4.1 or higher, 1-megabyte Mac Plus or higher, and a hard disk. Version 1.0 reviewed. Symantec, Living Videotext Division, 10201 Torre Ave., Cupertino, CA 95014. NCP (May '89)

**QuickDEX** ★★★★½  
keeps your phone numbers in an electronic Rolodex. The DA even plays the tone through the Mac's sound port. Version 1.4a. Requires 512KE; hard disk is recommended. \$60. Casady & Greene, P.O. Box 223779, Carmel, CA 93922. NCP (Jan '89)

**STELLA for Business** ★★★★½  
is a simulation tool used to model complex business systems. Requires that you master a discipline called "system dynamics." Requires 512K or more. Mac II version available. \$350. Living Performance Systems, 13 Dartmouth College Highway, Lyme, NH 03768. NCP (June '88)

**SuperExpert** ★★★★½  
is an expert-system shell that induces rules from examples. Rules become unwieldy when many criteria and examples are used. Overpriced. Version 1.4 reviewed. Requires 512KE. \$199.95. Softsync, 162 Madison Ave., New York, NY 10016. NCP (July '88)

**WillMaker** ★★★★½  
is a simple yet valuable run-time BASIC program for creating simple wills. Not elegant, but it does the job well. Version 3.0 reviewed. Requires 800K disk. \$59.95. Nolo Press, 950 Parker St., Berkeley, CA 94710. NCP (Mar '89)

## Utilities

**AutoMac III** ★★★★½  
is similar to Tempo II and Apple's MacroMaker but is generally easier to use and comes with excellent documentation and a powerful Macro Editor. Version 2.0 reviewed. Requires 512KE. \$79.95. Also distributed with Microsoft products (Word 3.02 and 4.0, File 2.0). Genesis Micro Software, P.O. Box 6236, 17124 N.E. Eighth Place, Bellevue, WA 98008. NCP (Feb '89)

**AutoSave DA** ★★★★  
is insurance against system crashes. It saves your work automatically at intervals from 1 to 99 minutes. Compatible with many applications, but not recommended for use with databases. \$49.95. Magic Software, 1706 Galvin Road S., Bellevue, NE 68005. NCP (Jan '88)

**Capture** ★★★★  
saves any portion of a Macintosh screen to the Clipboard or as a PICT file. Works in color on the Mac II. Requires 512K or more. Multifinder friendly. \$59.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (June '88)

**Colorizer** ★★★★  
adds pigments to the desktop and black-and-white applications. Also colors PICT graphics. System resources include saving and printing color screens. A useful novelty that'll run its course as developers add color to apps. Requires Mac II. \$49.95. Palomar Software, P.O. Box 2635, Vista, CA 92083. NCP (Jan '88)

**Copy II for the Macintosh** ★★★★  
is a collection of powerful yet easy-to-use disk utilities. Disk copying and much more. Version 7.2 reviewed. Requires 512K. \$39.95. Central Point Software, 15220 N.W. Greenbrier Parkway #200, Beaverton, OR 97006. NCP (Mar '89)

**DiskExpress** ★★★★  
optimizes hard-drive performance by reorganizing fragmented files. Best of its kind. Version 1.5. Requires 512K. \$49.95. ALSoft, P.O. Box 927, Spring, TX 77383. NCP (Jan '89)

**DiskFinder** ★★★★½  
searches disks for files as well as cataloging disks. Requires 512KE. \$49.95. Williams & Macias, South 3707 Godfrey Blvd., Spokane, WA 99204. NCP (Feb '89)

**DiskFit** ★★★★½  
is a utility for backing up and restoring hard disk files. Creates a "SmartSet" of floppy disks so incremental backups only update files modified since the last backup procedure. Backs up to floppies or another hard disk. Requires 512KE or higher. \$99.95. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. NCP (June '87)

**DiskTools Plus** ★★★★  
is a set of eight useful DAs and applications. Earlier version was sold as Battery Pak. The DA Disk Tools II is a Finder replacement. Also included are an RPN calculator, Phone Pad, and Calendar Manager. Requires 512K or more. \$49.95. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. NCP (Mar '88)

**DiskTop** ★★★★½  
is a DA Finder replacement of extraordinary power and ease of use. Comes with the useful LaserStatus DA and Widgets application. The extras alone are worth

the price. Requires 512K or more. Upgrade from version 1.0, \$7; \$10 with new manual. \$49.95. CE Software, 1854 Fuller Road, West Des Moines, IA 50265. NCP (Aug '87)

**Eureka: The Solver** ★★★★  
is a free-form numerical equation solver. Standard trigonometric and logarithmic functions are available, as is treatment of imaginary and complex numbers. \$195. Borland International, 4585 Scotts Valley Drive, Scotts Valley, CA 95066. NCP (Mar '88)

**Fastback for the Macintosh** ★★★★  
is hard-disk backup software that is very quick, if not very efficient. Doesn't automatically exclude applications. Creates a separate catalog disk. \$99.95. Fifth Generation Systems, 1322 Bell Ave., Tustin, CA 92680. NCP (Apr '88)

**Edit Plus** ★★★★  
is the file and disk editor for everyone, from newest Mac owner to oldest. It can do more for your disks and files than any other application. Can recover deleted MFS files. If you own a Mac, get it. HFS compatible. \$49.95. MacMaster Systems, 108 E. Fremont Ave. #37, Sunnyvale, CA 94087. NCP (Sept '86) ★'86 Eddy

**Findswell** ★★★★  
is an indispensable utility that installs a new button in the Open dialog box of virtually every Macintosh application. Press the button, type a search string, click on Find, and Findswell searches for any files that match. Click Open or double-click to open the correct file. Requires 512K or more. \$49.95. Working Software, P.O. Box 1844, Santa Cruz, CA 95061-1844. NCP (Nov '87) ★'87 Eddy

**1stAid Kit HFS** ★★★★½  
recovers lost or damaged files from floppy or hard disks. An excellent manual-turned-textbook actually teaches the Hierarchical File System. Requires 1 megabyte or more. Version 2.2 reviewed. \$99.95. 1stAid Software, 42 Radnor Road, Boston, MA 02135. NCP (June '88)

**Font/Da Juggler Plus** ★★★★  
gives you unlimited access to almost any number of fonts, desk accessories, and sounds. Uses hierarchical menus. \$59.95. ALSoft, P.O. Box 927, Spring, TX 77383. NCP (May '88)

**Glue** ★★★★½  
adds a print-to-disk capability to many programs. ImageSaver installs as printer driver; Viewer allows copying and printing of Glue files. Handy utility for desktop publishers. \$59.95. Solutions International, P.O. Box 989, Montpelier, VT 05602. NCP (Dec '86)

**Hard Disk Util** ★★★★½  
uses patch files to allow users to mount and run specified programs on their hard disks. The list of patches is constantly expanding. \$89.95. FWB Software, 2040 Polk St., San Francisco, CA 94109. NCP

**HFS Backup** ★★★★½  
ranks as one of the preferred hard-disk backup utilities. Back up by file/folder or last changes. Backup specifications can be saved as templates. Good graphic interface. Reliable. \$49.95. Personal Computer Peripherals Corp. (PCPC), 4710 Eisenhower Blvd., Building A, Tampa, FL 33634. NCP (Dec '86)

**HFS Locator Plus** ★★★★  
is the essential HFS DA. It can search for a file by name or date of creation, create folders, move files from one folder to another, set a program to launch while in an application. \$39.95. PBI Software, 1163 Triton Drive, Foster City, CA 94404. NCP (Sept '86)

**Icon-It!** ★★★★½  
lets you create icons to use as an alternative to menu commands. Comes with 47 icon templates or you can create your own. Version 1.0. \$79.95. Olduvai Software, 7520 Red Road, South Miami, FL 33143. NCP (Feb '88)

**LabView** ★★★★  
is a graphical programming environment that creates "virtual instruments" to perform calculations, acquire laboratory data, and control instrumentation. Slow. Version 1.1 reviewed. \$1,900. National Instruments, 12109 Technology Blvd., Austin, TX 78727-6204. NCP (July '88)

**LaserServe** ★★★★  
is a printer spooler for AppleTalk networks. After installation all operations are done with a DA. Works with both MacServe and TOPS. Requires 512K or more and 800K drive or hard disk. \$95 per node. Infosphere, 4730 S.W. Macadam Ave., Portland, OR 97201. NCP (Feb '87)

**MacFlow** ★★★★½  
is a design tool created for programmers. Traditional flowcharting symbols are linked together, and a symbol can be connected to a separate flowchart file. Now supports custom symbols. \$125. Mainstay, 5211-B Derry Ave., Agoura Hills, CA 91301. NCP (Apr '87)

**MacInUse** ★★★★  
tracks time spent in applications and saves info as text files. Installs on any disk, works in background. MFS, HFS compatible. Extremely valuable for tax purposes, client records, etc. \$79. SoftView, 4820 Adohr Lane, Camarillo, CA 93010. NCP (Jan '87) ★'86 Eddy

**MacNosy** ★★★★  
is a global disassembler. A very sophisticated user can use this program to look into the code of virtually any program. This advanced tool can take you places no other Mac program could dream of going if you have the skill to guide it. The documentation is sparse. For pros only. \$170. SE and Plus; \$350. Mac II. Jasik Designs, 343 Trenton Way, Menlo Park, CA 94025. NCP



# MINIFINDERS

**MacSafe** ★★★★  
is a data file security program that allows you to place multiple files into a "safe," and then you can further protect them through two types of encryption (including DES). Flexible and very easy to use. Allows for installation on hard disk. \$149.95. Kent Marsh Ltd., 1200 Post Oak Blvd., Houston, TX 77056. CP (Mar '87)

**MacTree** ★★★½  
displays your files in the form of a hierarchical tree. Good idea, poor performance. Can't view tree easily. Good search function. Requires 512K or more. \$69.95. Software Research Technology, 22901 Mill Creek Drive, Laguna Hills, CA 92653. NCP (Apr '88)

**MasterJuggler** ★★★★  
is Font/DA Juggler with so many features added that they can't be listed here. A world-class utility. Not as elegant as Suitcase II but has more features. Version 1.0 reviewed. Requires 512K or more. \$79.95. ALSoft, P.O. Box 927, Spring, TX 77383-0927. NCP (Mar '89)

**MockPackage+** ★★★★½  
is a set of extremely powerful DAs. Includes a text editor, text printer (supports LaserWriter), charter, terminal, and EZmenus. HFS compatible. \$35. CE Software, 1854 Fuller Road, West Des Moines, IA 50265. NCP (Mar '87)

**MultiDisk** ★★★★  
is an excellent software disk partitioner that allows partitions to be dynamically resizable, password-protected, and even encrypted. Version 1.0 reviewed. Requires 512K or higher. \$39.95. ALSoft, Inc., P.O. Box 927, Spring, TX 77383. NCP (May '89)

**myDiskLabeler** ★★★★  
is an excellent label maker. It can read directories and use large or small icons or anything desired. Comes with 54 precut labels. \$44.95; with color printing ability (on the ImageWriter II). \$54.95; with PostScript font capability (on the LaserWriter). \$64.95. Williams and Macias, P.O. Box 19206, Spokane, WA 99219. NCP (Aug '87)

**Ncryptor** ★★★★  
is a simple, safe program that lets users password-protect their files. The same program is used for encoding and decoding. This is one of the best products in its category. \$39.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP

**NightWatch** ★★★★½  
locks up your hard disk by using a floppy startup disk that acts as a key. Type in the correct password, and access to the hard disk is allowed. Version 1.02. Requires 512KE, a hard disk, and an 800K drive. Mac II and MultiFinder friendly. \$149.95. Kent Marsh Ltd., P.O. Box 460289, 1200 Post Oak Blvd., Suite 210, Houston, TX 77056. NCP (Sept '88)

**On Cue** ★★★★½  
lets you switch applications without returning to the Finder. Under MultiFinder, active applications are listed on a pop-up menu. Can also launch directly to a specific document. Version 1.0. Requires 512K. Mac II and MultiFinder friendly. \$59.95. ICOM Simulations, 648 S. Wheeling Road, Wheeling, IL 60090. NCP (Sept '88)

**OmniPage** ★★★★  
is a very good OCR program that can create editable text files out of scanned images. It works only with certain scanners and requires a lot of memory. So be sure you can meet its requirements before you buy. Version 1.0 reviewed. 68020 and 4 megabytes required. \$695. Caere Corporation, 100 Cooper Court, Los Gatos, CA 95030. NCP (Mar '89)

**PowerStation** ★★★★  
is an extremely easy-to-use, versatile and powerful Finder substitute. Loaded with powerful features. Comes with Pyrol. \$59.95. Fifth Generation, 1322 Bell Ave., Tustin, CA 92680. NCP (Dec '87)

**Printworks for the Mac** ★★★★  
is a comprehensive software-based dot-matrix printer control system. Optimizes printing from different applications and is easy to use. Requires 512K or more. \$75. SoftStyle, 7192 Kalaniana'ole Highway, Honolulu, HI 96825. NCP (Aug '87)

**Programmer's Online Companion** ★★  
puts an abridged version of Inside Macintosh in your system for reference. Simply read the text or transfer some or all of it directly into your normal editing window. Non-Mac-ish interface makes the program confusing, somewhat difficult to use. \$34.95. Addison-Wesley, Route 128, Reading, MA 01867. NCP (July '87)

**QuickKeys** ★★★★  
lets you make full use of your keyboard. Assign any command (menu choices, DAs, etc.) or series of text blocks and/or command to any key or key combination. Enormously powerful; necessary for Apple Extended Keyboard owners. Requires 512K or more. \$99.95. CE Software, 1854 Fuller Road, West Des Moines, IA 50265. NCP (Jan '88) ★'87 Eddy

**RamSnap** ★★★★  
is a RAM disk and disk cache in one easy-to-use package. Can store multiple configurations as files. Good product but a little pricey. \$30. Dove Computer Corp., 1200 N. 23rd St., Wilmington, NC 28405. NCP (June '87)

**Read-It! 2.0** ★★★★½  
is an upgrade of Olduvai's OCR package. Still a good value and performer. Now includes printer drivers for most scanners, batch processing, background operation under MultiFinder, and 22 font tables. Recognizes multiple columns, italics, some foreign characters, but not underlined text. Version 2.0. Requires

1 megabyte. \$495. Olduvai Corporation, 7520 Red Road, Suite A, South Miami, FL 33143. NCP (June '89)

**RoundUp** ★  
searches your disk for a specified text string. Slow, awkward, poor performer. Does not work with Mac II or 68020 accelerators. Version 2.0E reviewed. Requires 512K. \$49.95. Virginia System Software Services, 5509 W. Bay Court, Midlothian, VA 23112. NCP (Apr '89)

**ScreenRecorder** ★★★★½  
is a utility for recording your on-screen Mac activities. Ideal for presentations and training. Uses a tape-recorder model. "Tapes" can include sounds recorded with applications such as MacRecorder and can be a fixed length or loop. Recordings can also be installed into HyperCard stacks for easier distribution. Version 1.0. Requires 1 megabyte. \$195. Farallon Computing, 2201 Dwight Way, Berkeley, CA 94704. NCP (June '89)

**Sentinel** ★★★★  
encrypts data files (or sets of files) using a super-secure DES or a super-fast SuperCrypt algorithm. Provides high-level security if you can keep your passwords secret. Requires 512KE. \$295. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. NCP (Apr '88)

**Smart Alarms** ★★★★½  
is the best reminder system for the Mac. Easy to use, versatile, and, well, smart. This self-running DA automatically reminds you of anything you enter into its Reminder file, giving you a wide range of useful advance warning options. \$49.95. Imagine Software, 19 Bolinas Road, Fairfax, CA 94930. NCP (Oct '86)

**SmartScrap and The Clipper** ★★★★½  
are two useful DA utilities for graphics work. SmartScrap is a major enhancement to the standard Scrapbook DA. The Clipper provides you with a transparent Clipboard window, allowing you to resize or crop a graphic to the area that it will be pasted to. \$59.95. Solutions International, 30 Commerce St., Williston, VT 05495. NCP (July '87) ★'87 Eddy

**SoundWave** ★★★★  
is a useful sound recording and editing utility. Works with waveforms; able to change sampling rates. Previously known as SoundCap. \$199.95. Impulse, 6870 Shingle Creek Parkway, Minneapolis, MN 55430. NCP (Apr '88)

**Stepping Out II** ★★★★  
is a software alternative to a large-screen monitor. Lets you create a virtual screen (as large as memory allows) inside the Mac's 9-inch screen. Automatically scrolls to new document position as you type or draw. Version 2.0. Requires 1 megabyte. \$95. Berkeley System Design, 1700 Shattuck Ave., Berkeley, CA 94709. NCP (Oct '88)

**StuffIt** ★★★★  
compresses files to reduce the amount of space they take up on disk. Great for transferring documents via modem. Also joins and encrypts files. Version 1.5. Requires 512KE. Shareware fee, \$18. Raymond Lau, 100-04 70 Ave., Forest Hills, NY 11375-5133; also available on most electronic services. NCP (Dec '88)

**Suitcase II** ★★★★  
is even better than its predecessor. Increased file-management capabilities enable you to open 99 font, DA, sound, or FKey files at a time. Can display any installed font in any style. Fonts can also appear in their proper typefaces on their font menus. Includes Font Harmony for resolving font number conflicts, and Font & Sound Valet for font and sound compression. Version 1.2.2. Requires 512KE or higher. \$79. Fifth Generation Systems, 11200 Industriplex Blvd., Baton Rouge, LA 70809. NCP (June '89) ★'87 Eddy

**SuperLaserSpool** ★★★★  
is a LaserWriter spooler. Very fast because it does conversion to PostScript in the background, but doesn't print a faithful rendition of PageMaker documents as a result. \$149.95 single user, \$395.95 for up to five users on one network. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. NCP (June '87)

**Symantec Utilities for Macintosh** ★★★★  
(or SUM) reduces worries about losing data. It prevents, diagnoses, and, if required, fixes many serious disk and file problems. Recovers lost files on crashed hard disks. Version 1.0. Requires 512KE. \$99.95. Symantec, 10201 Torre Ave., Cupertino, CA 95014. NCP (Sept '88) ★'88 Eddy

**Tempo II** ★★★★½  
is a powerful keyboard macro program that gives owners of extended keyboards their money's worth. Especially good for building sequential macros. Features include conditional branching and the ability to remember menu selections by name. Version 1.0. \$149.95. Affinity Microsystems, Ltd., 1050 Walnut St., Suite 425, Boulder, CO 80302. NCP (Dec '88)

**Top Desk** ★★★★½  
is a set of seven self-installing (and self-removing) DAs. Menu Key adds Command-key sequences to programs. View allows looking at and moving data among up to eight MacWrite documents; also included are BackPrint, Touch 'n' Go, Blank, Encrypt, and Launch. \$59.95. Cortland Computer, P.O. Box 9915, Berkeley, CA 94709. NCP (May '86) ★'86 Eddy

**TMON** ★★★★  
is the debugger for the Mac. This isn't open to question. TMON is simply the best. Comes with the latest version of Darin Adler's Extended User Area. \$149. ICOM Simulations, 626 Wheeling Road, Wheeling, IL 60090. NCP

**TurboDownload** ★★★★½  
is a DA designed specifically to increase the speed of Xmodem data transfers from national databases to your Mac. Speed increases range upward from 50



# MINIFINDERS

percent to over 300 percent at 2,400 baud. \$39.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP

**TypeNow** ★★★★  
is a DA that allows the Mac and ImageWriter to function as an electronic typewriter. Type can be placed into blanks in complex forms easily. Typing can be recorded and played back. \$39.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (Jan '86)

**Virex** ★★★★½  
is the first commercial antivirus program for the Mac. Seeks out and repairs damage done by the three best-known Macintosh viruses and points out anything suspicious that might be a new form of virus. Updates will be released if new viruses appear. Version 1.1a. Requires 1 megabyte. \$99.95, updates: \$15. Site licenses (100-CPU minimum): \$20-\$30/computer; updates, \$4-\$8. HJC Software, P.O. Box 51816, Durham, NC 27717. NCP (June '89)

**WorksPlus Command** ★★★★  
lets you build and define macros for all Works modules. Predefined macros provide for an even tighter integration of the program's word-processing, spreadsheet, and database modules. Requires 1 megabyte or more. \$99.95. Lundeen & Associates, P.O. Box 30038, Oakland, CA 94604. NCP (May '88)

## Languages

**AAIS Prolog** ★★★★  
is a fast standard Prolog with excellent debugging and error handling. Good for serious program development. Documentation is not as good as the program. \$150. Advanced AI Systems, P.O. Box 39-0360, Mountain View, CA 94039-0360. NCP (Mar '87)

**Acknowledge** ★★★★½  
lets advanced programmers create customized applications that will accomplish many telecommunications tasks — from automatically picking up E-mail to communicating with VAXs. Version 1.0. Requires 512K. \$495. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. NCP (Jan '89) ★'88 Eddy

**Allegro Common Lisp** ★★★★  
is a development environment with an EMACS-style editor that implements most Common LISP editing and debugging functions. Version 1.2. Requires 1 megabyte and a hard drive. \$600. Coral Software, P.O. Box 307, Cambridge, MA 02142. NCP (Nov '88) ★'88 Eddy

**ExperCommon Lisp** ★★★  
is a LISP development system. Not fully Common LISP compatible, but creates good compiled code and stand-alone applications. Requires 1 megabyte or more. \$995. ExperTelligence, 559 San Ysidro Road, Santa Barbara, CA 93108. NCP (Aug '87)

**ExperProlog II** ★★★  
is a Prolog based on the new Prolog II standard. Has the ability to handle infinite trees and allows user-defined functions that operate conditionally. Documentation is not the best and Mac interface is nonstandard. \$495. ExperTelligence, 559 San Ysidro Road, Santa Barbara, CA 93108. NCP (Mar '87)

**MacExpress** ★★★  
is a development environment or shell. Programmers use it to save time and effort when developing stand-alone applications for the Mac. \$195. ALSoft, P.O. Box 927, Spring, TX 77383. NCP (Feb '86)

**MacForth Plus** ★★★★  
is an excellent implementation of the popular Forth programming language. New, reduced price; \$199. Creative Solutions, 4701 Randolph Road, Rockville, MD 20852. NCP

**Macintosh 68000 Development System** ★★★★  
is a fairly traditional assembly-language package. The two-disk set provides an editor (Edit), an assembler, a linker, an executive, and a resource compiler. \$195. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP

**MacScheme** ★★★  
is a LISP dialect with "artificial intelligence" capabilities. Has a large appetite for RAM. Interpreted language with Toolbox access limited to a small part of QuickDraw. \$125. Semantic Microsystems, 4470 S.W. Hall St., Beaverton, OR 97005. NCP (June '86)

**MacScheme+Toolsmith** ★★★★  
is a Mac version of Scheme, a LISP dialect. Beautiful implementation, marred only by relative slowness compared to similar products. Get Toolsmith. Requires 1 megabyte or more. \$395. Semantic Microsystems, 4470 S.W. Hall St., Beaverton, OR 97005. NCP (Aug '87)

**Object Logo** ★★★★  
is an object-oriented programming language with access to the Toolbox. Good product, but can't produce stand-alone applications. Requires 512K or more. \$79.95. Coral Software, P.O. Box 307, Cambridge, MA 02142. NCP (Aug '87)

**QUED (Quality Editor for Developers)** ★★★★  
is the ultimate source-code editor. Loaded with useful and well-thought-out features, it will make any programmer's life much easier. It is not a word processor, however. \$65. Paragon Concepts, 4954 Sun Valley Road, Del Mar, CA 92014. NCP (Mar '86)

**THINK's LightspeedC** ★★★★½  
features rapid turnaround time for development and testing of programs by the use of an integrated compiler, linker, and editor. Source-level debugger steps through your code line by line to examine the values of variables. Version 3.0.

Requires 2 megabytes. \$175. Symantec, 10201 Torre Ave., Cupertino, CA 95014. NCP (Jan '89) ★'88 Eddy

**THINK's Lightspeed Pascal** ★★★★  
is a fast, powerful development system for Pascal programming. Fully integrated Mac-like environment. Requires 512K or more. \$125. Symantec, 10201 Torre Ave., Cupertino, CA 95014. NCP (Feb '87)

**TML Data Base Toolkit** ★★★★  
is an ISAM-type database that provides fast and efficient administration of large data files in applications developed with TML compiler. Supports multiple open index files. \$89.95. TML Systems, 4241 Bay Meadows Road, Jacksonville, FL 32217. NCP (Dec '86)

**TML (MacLanguage Series) Pascal** ★★★★  
is a good Pascal compiler, capable of producing stand-alone programs. Can use most existing Lisa Pascal programs with only slight modification. Requires 512K or more. \$99.95. TML Systems, 4241 Bay Meadows Road, Jacksonville, FL 32217. NCP (June '86) ★'86 Eddy

**TML Source Code Library** ★★★★½  
shows how to write programs that use custom definition routines, speech, serial drivers, split bars, and other topics. Provided on three 400K disks. Requires TML Pascal. \$79.95. TML Systems, 4241 Bay Meadows Road, Jacksonville, FL 32217. NCP (Dec '86)

**Visual Interactive Programming** ★★★★  
is a unique visual programming system for creating simple Macintosh applications. Programs are constructed in a flowchart-type manner. Easy access to most Toolbox routines. \$149.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (June '87)

**ZBasic** ★★★★  
is a fast, interactive compiler capable of creating stand-alone applications that take advantage of Mac's unique features and abilities. Includes Edit, RMaker, and MacinTalk. Requires 512K or more. \$89.95. Zedcor, 4500 E. Speedway Blvd., Tucson, AZ 85712. NCP (Dec '86)

## Education

**Alphabet Blocks** ★★★★  
teaches prereaders the letters and sounds of the alphabet. The digitized voice of an on-screen elf is clear and pleasant. Very intuitive. Requires 1 megabyte or more. \$59.95. Bright Star Technology, 14450 N.E. 29th Place, Bellevue, WA 98007. NCP (May '88)

**American Discovery** ★★★  
is an interactive United States geography game that teaches states, capitals, and, in a roundabout manner, postal codes. Version 2.0 reviewed. Requires 512K or more. \$59.95. Great Wave Software, 5353 Scotts Valley Drive, Scotts Valley, CA 95066. NCP (May '88)

**Business Simulator** ★★★★  
is a training tool in a simulation game. Make decisions that manage the company through several stages over 25 years. Decisions become more difficult over time. Requires 1 megabyte or more, two disk drives (one must be 800K). May be run from a hard disk. \$69.95. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. NCP (Dec '87)

**Course Builder** ★★★★  
creates stand-alone educational applications. An easy-to-learn dedicated programming language uses blocks and arrows. Graphics, animation and sound can be integrated. Version 2.0 allows mathematical calculations. Poor documentation. \$395, plus \$10 shipping. Tele-Robotics International, 8410 Oak Ridge Highway, Knoxville, TN 37931. NCP (Oct '87)

**KidsTime** ★★★★  
is a package of five quality educational programs for children between the ages of 3 and 12. The programs all have adjustable difficulty levels. Some use speech, and one is a nice introduction to musical notes. \$49.95. Great Wave Software, 5353 Scotts Valley Drive, Scotts Valley, CA 95066. NCP (Oct '86) ★'86 Eddy

**LearnWord 3.0** ★★★★½  
is a three-part series of cassette tape/disk modules that explain the intricacies of Word 3.0. They do the job but remind you why cutting classes was more fun. \$49.95 per module. Personal Training Systems, P.O. Box 54240, San Jose, CA 95154. (Apr '88)

**LXR•Test** ★★★★  
generates tests from a database of questions. Makes it easy to modify and scramble test questions. Flexible output. Requires Mac 512K or higher, two 800K drives, or a hard-disk drive. \$199 or \$399, depending on features. Logic eXtension Resources, 9651 Business Center Drive, Rancho Cucamonga, CA 91730. NCP (May '88)

**Mavis Beacon Teaches Typing!** ★★★★  
has more features than a Selectric. Lots of diagnostics concerning typos. Incomplete documentation. Version 1.1. Requires 1 megabyte. \$49.95. The Software Toolworks, 19808 Nordhoff Place, Chatsworth, CA 91311. CP (Nov '88)

**On Becoming a Desktop Publisher** ★★★★  
is a video training tape based largely on the syndicated television program, "The Computer Show." Good primer on the fundamentals of DTP products. Will eventually become dated. Requires Beta or VHS VCR. \$49.95. Ocean Communications, 1641 N. First St., Suite 160, San Jose, CA 95112. (Sept '88)



# MINIFINDERS

**Reader Rabbit** ★★★★  
teaches 4-to-8-year-olds how to read in four elegant games that play and build off of each other. Requires 512KE or higher and an 800K drive. Mac II and MultiFinder hostile. Version 2.0 reviewed. \$59.95. The Learning Company, 6493 Kaiser Drive, Fremont, CA 94555. CP (June '88)

**Sensei Physics** ★★★★½  
is a capable, intelligent, well-designed study aid. Covers Vectors to Thermodynamics to The Nature of Light. Animated experiments let you try out concepts. Requires 512K or more. \$99.95. Broderbund Software, 17 Paul Drive, San Rafael, CA 94903-2101. CP (Jan '88)

**Type!** ★★★★½  
is a typing tutorial that is both practical and flashy. It allows users to interrupt and move easily between functions; however, use of the Return key or space bar are assumed but never explained. Version 1.0. Requires 512K. \$29.95. Broderbund, 17 Paul Drive, San Rafael, CA 94903-2101. NCP (Nov '88)

**Typing Instructor Encore** ★★★★  
recognizes that it's being used on a word processor. While it is easy to control, there are some strange bugs in the program. Requires 512K. \$49.95. INDIVIDUAL Software, 125 Shoreway Road, Suite 3000, San Carlos, CA 94070-2704. NCP (Nov '88)

**Typing Tutor IV** ★★★★  
consistently tests your use of all keys, including seldom-used ones. It's hard to maintain user's attention span, as the testing material is unimaginative. Requires 512K. \$49.95. Simon & Schuster, One Gulf and Western Plaza, New York, NY 10023. NCP (Nov '88)

## Entertainment

**Arkanoïd** ★★★★  
is a fast-moving, arcade-style game — a souped-up Breakout. It also includes a special "Boss mode," which brings up a perfectly functional word processor to make your boss think you're actually working. Version 1.0. Requires 512K. \$49.95. Discovery Software, 163 Conduit St., Annapolis, MD 21401. NCP (May '89)

**Beyond Dark Castle** ★★★★½  
brings back Prince Duncan in an encore performance to run, jump, and beat his way to victory. But really, just more of the same. Requires 512KE. \$49.95. Silicon Beach Software, P.O. Box 261430, San Diego, CA 92126. NCP (Aug '88)

**Beyond Zork** ★★★★½  
is yet another installment in the famous Zork series of text adventures. Find the fabled Coconut of Quendor to restore failing magic in this expert-level game. On-screen mapping and the Mac's window environment are utilized. \$49.95. Infocom, 125 Cambridge Park Drive, Cambridge, MA 02140. NCP (Apr '88)

**The Chessmaster 2000** ★★★★  
is a masterful chess program that will appeal to both novice and master. You can view the board from a 2-D or 3-D perspective and turn the board for a better look. Play is smooth and easy, and the program responds by voice. You may get tired of hearing "Gotcha," though. \$39.95. The Software Toolworks, 13557 Ventura Blvd., Sherman Oaks, CA 91423. CP (July '87)

**Chuck Yeager's Advanced Flight Trainer** ★★  
doesn't quite have the right stuff to hold interest for long. Simplistic controls. Lacks features found in versions for other computers. Version 1.0. Requires 512KE and two 800K disk drives. \$49.95. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. NCP (Nov '88)

**Crystal Quest** ★★★★  
combines all the good elements of nearly every video game ever made. Move a piece around to gobble up points and crystals. Shoot the nasties and get through the goal before they get you. Excellent sound effects. In color on the Mac II. Requires 512K. \$49.95. Casady and Greene, P.O. Box 223779, Carmel, CA 93922. NCP (Apr '88) ★ '88 Eddy

**Dark Castle** ★★★★  
is an outstanding achievement in action games, integrating RealSound with superb animation and graphics. You'll need better-than-average hand/eye coordination, but it's well worth the effort. Requires 512K or more. \$39.95. Silicon Beach Software, P.O. Box 261430, San Diego, CA 92126. NCP (Apr '87) ★ '87 Eddy

**Déjà Vu: A Nightmare Comes True** ★★★★  
is a graphic adventure that breaks new ground. Innovative use of the Mac interface in a truly playable and exciting game. A great introduction to graphic adventure games. \$49.95. Mindscape, P.O. Box 1167, Northbrook, IL 60065. CP (Jan '86) ★ '85 Eddy

**Down Hill Racer** ★★★★  
is an action game with three skier personalities, four courses, and four skill levels. There's something here for every player, no matter how bad or good. Full digitized sound (very nice!). \$49.95. Miles Computing, 7741 Alabama Ave., Canoga Park, CA 91304. CP (Sept '87)

**Falcon** ★★★★½  
simulates an F-16 fighter jet with gut-tightening, sweat-making realism. Go against MiGs and dodge SAMs scenarios. Requires 1 megabyte or more. \$49.95. Spectrum HoloByte, 2061 Challenger Drive, Alameda, CA 94501. NCP (May '88)

**Fool's Errand** ★★★★  
is an outstanding collection of 80 puzzles woven around a mythical theme of

an evil priestess and the search for wisdom. Requires 512K or more. \$49.95. Miles Computing, 7741 Alabama Ave., Canoga Park, CA 91304. NCP (July '88)

**GO** ★★★★½  
is the Chinese equivalent of chess. Players plonk markers on a grid to gain territory and outwit an opponent or the computer. Requires 512K or more. Mac II hostile; MultiFinder friendly. Version 1.0 reviewed. \$49.95. Infinity Software, 1144 65th St., Studio C, Emeryville, CA 94608. NCP (June '88)

**Handwriting Analyst** ★★★★½  
produces a personality profile based on answers to questions about one's handwriting. It's simple and the results will amaze and astound. \$49.95. Ciasa, 2017 Cedar St., Berkeley, CA 94709. NCP (Apr '87)

**Klondike** ★★★★  
is a version of solitaire that uses video-gamelike scoring to create a superb, totally addictive game. Simple to play, nearly impossible to stop playing. Version 3.3. Shareware: \$10. Unison Software, 415 Clyde Ave., Mountain View, CA 94043. NCP (Dec '87)

**Leather Goddesses of Phobos** ★★★★  
is another in the long line of witty and entertaining Infocom text adventures. This one lets you choose your sex and comes with a 3-D comic and a scratch 'n' sniff card. It has three levels of play: tame, suggestive, and lewd. \$19.95. Infocom, 125 Cambridge Park Drive, Cambridge, MA 02140. NCP (Feb '87)

**Lunar Rescue** ★★★★½  
puts you in the role of a benevolent trader ready to save a moon colony from invasion. Blast the enemy while you travel from town to town trading goods for the supplies you need for your mission. Version 1.0. Requires 512KE. \$59.95. Practical Computer Applications, 1305 Jefferson Highway, Champlin, MN 55316. CP (Jan '89)

**MSFL: Pro League Football** ★★★★½  
is a professional football league simulation that encourages people to play people, not the machine. Fast with lots of stats. Quirky MS-BASIC behavior. Spotty manual. No LaserWriter support. Requires 1 megabyte or more. \$49. MicroSports, P.O. Box 15799, Chattanooga, TN 37415. NCP (Apr '88)

**Ogre** ★★★★  
is a strategy tank game played on a hexagon grid. The ogre is an intelligent cybertank out to smash your command post. Customize your defense. Exceptionally good Mac interface. Has two-player option. \$30. Origin Systems, 340 Harvey Road, Manchester, NH 03103. CP (Nov '87)

**Quarterstaff** ★★★★  
is a fantasy adventure game of the typical "good versus evil" variety. Ability to use characters in other adventures gives this game a lot of potential for development. Version 1.2. Requires 1 megabyte or more. \$49.95. Simulated Environment Systems, 800 S. Pacific Coast Highway, Redondo Beach, CA 90277. NCP (Mar '88)

**Shadowgate** ★★★★½  
is an icon-based graphic adventure. You, as the seed of prophecy, must save the world from the evil warlock. Far surpasses all others with great animated graphics, sound, and adventure. \$49.95. Mindscape, P.O. Box 1167, Northbrook, IL 60065. CP (Dec '87)

**Shanghai** ★★★★  
challenges players to clear a board of all 144 tiles by matching pairs of mah-jongg tiles and removing them. Terrific strategic options plus the ability to randomly generate new game boards keep this one fresh. \$44.95. Activision, 3885 Bohannon Drive, Menlo Park, CA 94025. CP (Nov '86) ★ '86 Eddy

**SimCity** ★★★★  
is an animated game that's also a city planning simulator. You can work on any one of eight scenarios included in the package or build your own city from the ground up. Evaluation window gives you instant feedback on your efforts. Version 1.0. Requires 512K. \$49.95. Maxis Software, 953 Mountain View Drive, Suite 113, Lafayette, CA 94549. CP (June '89)

**Solitaire Royale** ★★★★  
is a collection of eight solitaire card games. The Tour mode cycles through each game. Tournament deals the same hand for several players. \$34.95. Spectrum HoloByte, 2061 Challenger Drive, Alameda, CA 94501. CP (May '88)

**Space Quest** ★★★★  
is a 3-D animated adventure in which you play a jaritor in a dicey situation. All you have to do is get off your ship before it explodes and save the Earnon System. Runs on any Mac. \$49.95. Sierra On-Line, P.O. Box 485, Coarsegold, CA 93614. CP (Sept '87)

**Star Fleet I: The War Begins!** ★★★★  
is a space opera of the Star Trek variety. Rise through the ranks from ensign to admiral in this serialized adventure. Requires 512K or more. \$55. Interstel, P.O. Box 57825, Webster, TX 77598. NCP (May '88)

**Strategic Conquest Plus** ★★★★½  
challenges you to discover an unexplored world and conquer it by manufacturing and deploying armies, ships, and planes. A two-disk game that doesn't support an external drive. Requires 512K or more. \$59.95. PBI Software, 1111 Triton Drive, Foster City, CA 94404. CP (Feb '88)

**Trust & Betrayal: The Legacy of Siboot** ★★★★½  
requires negotiating with six artificial personalities in a struggle for power — not surprising considering that it comes from the maker of Balance of Power. Uses hieroglyphics to communicate in a fantasy world. Requires 512K or more. Mindscape, P.O. Box 1167, Northbrook, IL 60065. CP (Mar '88)



# MINIFINDERS

## Music

- Alchemy** ★★★★  
loads and edits digitally sampled sounds from most commercial samplers. Works with 512K, but it eats up memory quickly. Requires MIDI or RS-422 interface, and sampler. \$495. Blank Software, 1477 Folsom St., San Francisco, CA 94103. CP (Oct '88) ★'88 Eddy
- ConcertWare+** ★★★★  
is an enhanced version of ConcertWare. Has different instruments and can use any four of a set of eight at any point in a piece. Supports Adobe Sonata music font. \$69.95. Great Wave Software, 5353 Scotts Valley Drive, Scotts Valley, CA 95066. NCP (Dec '87) ★'85 Eddy
- ConcertWare+MIDI** ★★★★  
is a composition and transcription program that can record multiple notes from a MIDI keyboard. Easy to use if you read music. Handles eight tracks of eight voices each. Requires 512K. Version 4.0. \$149.95. Great Wave Software, 5353 Scotts Valley Drive, Scotts Valley, CA 95066. NCP (Dec '87)
- Cue: The Film Music System** ★★★★½  
is a powerful and versatile assistant for scoring films. Automates spotting and logging cue points and searching for matching tempos. Also performs many minor jobs, such as generating a performing rights cue sheet. Version 2.0 reviewed. Requires 512K. \$595. Opcode Systems, 1024 Hamilton Court, Menlo Park, CA 94025. CP (Feb '89)
- Deluxe Music** ★★★★  
lets you enter up to 48 voices on eight staves and play the music through the Mac's internal speaker and/or via MIDI. Requires 512K or more. Mac II and MultiFinder hostile. Version 2.0 reviewed. \$99.95. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. CP (June '88)
- Graphic Notes** ★★★★  
is a very good page-layout program for music notation, with MIDI support. Comes with special musical notation keypad. Version 2.0 reviewed. Requires 1 megabyte and second disk drive. \$595 (including Presto keypad). Music Software Plus, 7000 Soquel Drive, Suite 444, Aptos, CA 95003. NCP (Apr '89)
- Jam Factory** ★★★  
is a program for performing complex manipulations on MIDI data in real time. Unique, entertaining, and very powerful, but requires lots of patience and practice. Requires 512K or more, MIDI interface, and MIDI synthesizer. \$189. Intelligent Computer Music Systems, P.O. Box 8748, Albany, NY 12208. CP (Oct '87)
- Jam Session** ★★★★  
is a music program for those who think MIDI refers to the length of skirts. Without any skill, you can "jam" with rock, jazz, rap, or country tunes. A sort of "Sing Along with Mitch" for the computer set. Requires 512K or more. \$49.95. Broderbund, 17 Paul Drive, San Rafael, CA 94903-2101. CP (July '88)
- M** ★★★  
is a music composition and creation program that works with MIDI data in real time. Unique, entertaining, and powerful, but requires lots of practice and patience. Requires 512K or more, MIDI interface, and MIDI synthesizer. \$219. Intelligent Computer Music Systems, P.O. Box 8748, Albany, NY 12208. CP (Oct '87)
- Master Tracks Pro** ★★★★½  
is a full-featured second-generation MIDI sequencer that adheres to the Mac interface very well. It's the first program to have graphic controller editing. No longer needs patch chasing for professional use. Version 3.3 reviewed. Requires 512K or higher. \$395. Passport Designs, 625 Miramontes St. #103, Half Moon Bay, CA 94019. CP (Dec '87)
- Performer** ★★★★  
is the definitive MIDI sequencer and is priced accordingly. Includes looping, SMPTE syncing, 32 simultaneous ins and outs, unlimited overdubbing, and compatibility with Professional Composer for transcription. Version 2.2. Requires MIDI interface and 512K or more. \$395. Mark of the Unicorn, 222 Third St., Cambridge, MA 02142. CP (Jan '88)
- Practica Musica** ★★★★  
uses an interactive game and practice approach to teach music theory and ear training. Excellent training tool for the serious music student, it is also fun for anyone who wants to develop a trained ear for intervals, chords, and melodies. Requires 512K or more. \$125. ARS Nova Software, P.O. Box 40629, Santa Barbara, CA 93140. NCP (Nov '87) ★'87 Eddy
- Professional Composer** ★★★★½  
produces performance-quality sheet music using Adobe's Sonata font. Scores can be created from scratch or imported from Performer (and can be exported to Performer for MIDI playback). Requires 512K or more. \$495. Mark of the Unicorn, 222 Third St., Cambridge, MA 02142. CP (Jan '88)
- Softsynth** ★★★★  
creates sounds for additive synthesis samplers. Downloading from Mac to sampler is time consuming. Requires 512K, sampler, MIDI interface. \$295. Digidesign, 1360 Willow Road, Suite 101, Menlo Park, CA 94025. CP (Oct '88)
- Sound Designer** ★★★★  
set the standard for editing samples on lower-cost samplers, but it still lacks real-time high-fidelity playback. Requires 512K, sampler, MIDI interface. Emax, E II, 2000/2002, DSS-1, \$900, \$495; all others, \$395. Digidesign, 1360 Willow Road, Suite 101, Menlo Park, CA 94025. CP (Oct '88)

## Studio Session

★★★★½  
consists of two programs, an Editor and a Player, that produce music with six voices of digitized sound. Excellent program and manual make this a good buy. \$89.95. Bogas Productions, P.O. Box 6699, Terra Linda, CA 94903-0699. NCP (Aug '87) ★'86 Eddy

## Turbosynth

★★★★  
creates sounds for a digital sampler using modular-synthesis techniques. Good harmonic spectral inverter. Lacks an easy method of multisampling. Requires 1 megabyte, sampler, MIDI interface. \$349. Digidesign, 1360 Willow Road, Suite 101, Menlo Park, CA 94025. CP (Oct '88)

## UpBeat

★★★★½  
turns the Macintosh into a front panel for a highly complex and versatile drum machine. Input patterns with mouse, MIDI keyboard, or drum machine. Requires 512K. \$150. Intelligent Music, P.O. Box 8748, Albany, NY 12208. CP (May '88)

## Hardware & Accessories

### AppleCD SC

★★★★  
reads CD-ROM optical discs that contain up to 656 megabytes of data. Also plays audio compact discs. Reads High Sierra format, an industry standard for CD-ROM. Requires SCSI port. \$1,295. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (Dec '88)

### Apple Scanner

★★★★½  
is not the state of the art, but is adequate for scanner neophytes. The 4-bit (16 gray levels) scanner comes with AppleScan software and HyperScan, written by Bill Atkinson. Requires System 6.0; hard disk for full-page work; SCSI connection cables. \$1,799. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (Feb '89)

### Classic Professional Graphics Display

★★★★½  
is a low-cost color monitor for the Mac II. Good value, but has an IBM-look about it. Green tint is annoying. Requires Apple video card. \$549. Classic Components, 1490 Artesia Blvd., Gardena, CA 90247 (June '88)

### DATAPAK

★★★★  
is a 45-megabyte removable Winchester hard disk. Great for backing up your main hard disk or transporting large amounts of data between office and home. Requires SCSI connector and System 4.1/5.5 or later. Drive, \$1,799.95; cartridges, \$149.95 each or tri-pack for \$419.95. MASS MICRO Systems, Inc., 550 Del Rey Ave., Sunnyvale, CA 94086-3258. (Jan '89)

### DaynaFile

★★★★  
hooks up to a SCSI drive to read MS-DOS disks in the Mac environment. Use Mac applications to manipulate data created with an IBM PC. Comes in both 5.25-inch and 3.5-inch formats. \$595 for single floppy. Dayna Communications, 50 S. Main St., Fifth Floor, Salt Lake City, UT 84144. (Jan '88) ★'87 Eddy

### DEST PC Scan 2000

★★★★½  
is an 8-bit scanner that saves images in up to 256 levels of gray. Can be configured for IBM PCs. Requires 1 megabyte. Scanner, \$1,495; Publish Pac software, \$595; OCR text processor card, \$995. DEST Corporation, 1201 Cadillac Court, Milpitas, CA 95035. NCP (Dec '88)

### FAXstl

★★★  
is an early entrant in the fax modem race. Adequate, but slower than most fax machines, and using it as a normal modem requires changing plugs. Requires 1 megabyte of memory, and a hard disk is strongly recommended. \$695. STF Technologies, P.O. Box 247, Higginsville, MO 64037. NCP (Feb '89)

### Felix

★★★★  
is an optical-tracking graphics tablet that replaces a mouse. Precision mode gives pixel-by-pixel control. Doesn't collect dirt like a mouse does. The 6-inch-square device is designed primarily for right-handed people. Works with Mac Plus. \$149. Altra, 1200 Skyline Drive, Laramie, WY 82070. (Sept '88)

### Grapple LQ

★★★★  
hooks Macs up to parallel laser and 24-pin letter-quality printers. A cable, driver software, and special fonts combine to make dozens of once-unfriendly printers now compatible with the Mac. Requires 1 megabyte and a parallel printer. \$149. Orange Micro, 1400 N. Lakeview Ave., Anaheim, CA 92807. (Nov '88)

### Hewlett-Packard ColorPro Graphics Plotter

★★★  
is an eight-pen desktop plotter that requires third-party software to drive it. Fonts are limited to an optional Graphics Enhancement Cartridge that requires some BASIC programming. \$1,295. Hewlett-Packard, 16399 W. Bernardo Drive, San Diego, CA 92127. (Feb '88)

### ImageMaker

★★★★  
shoots 35mm color slides directly from the Mac. Supports most presentation software. Uses patterns to represent colors. Not fully compatible with the Mac II. Requires 512K or more. \$4,995. MacDriver software, \$149. Presentation Technologies, 743 N. Pastoria Ave., Sunnyvale, CA 94086. (Feb '88)

### ImageWriter LQ

★★★★½  
outputs letter-quality text and graphics at 216 dpi. To do so, it reduces 72-dpi screen fonts to a third of their actual size. Takes a lot of memory. Printer Driver version 2.0. Requires 1 megabyte and large font sizes. \$1,400. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (Jan '89)



# MINIFINDERS

**IS/ONE tablet** ■■■■½  
with Penworks software lets you use a corded or cordless pen or mouse and a high-res tablet for precise graphics input. Minor bugs with some applications and DAs. Keystroke macros can be launched from the tablet. Minimal documentation. Requires 1 megabyte or more. \$595 to \$1,145. Kurta, 4610 S. 35th St., Phoenix, AZ 85040. (Jan '88)

**LaserWriter IINT** ■■■■  
is Apple's mid-priced PostScript laser printer. It's faster than the LaserWriter Plus, with blacker blacks. Gray scale is less even than that of Plus. Requires 512K or more. \$4,599. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (May '88)

**LaserWriter IINTX** ■■■■½  
is Apple's top-of-the-line PostScript laser printer. 68020 chip makes it very speedy; expandable to 12 megabytes; SCSI hard disk can be attached for fonts. Requires 512K or more. \$6,599. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (May '88)

**LaserWriter IISC** ■■■■  
is Apple's low-end QuickDraw laser printer. Can be upgraded to IINT or IINTX; reasonably fast. Requires 1 megabyte or more. \$2,799. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (May '88)

**Mac II Workstation** ■■■■  
is the best, most versatile computer workstation around. This freestanding or wall-mountable heavy steel unit includes a high shelf for your Mac II and a movable, damped arm for your monitor. The unit comes in a variety of configurations. \$540. Ergotron, 3450 Yankee Drive, Suite 100, Eagan, MN 55121. (Mar '89)

**Mac-101** ■■■■  
is a keyboard alternative that has a good feel to it. Has a keypad, 15 function keys, and more. The 101-Keys DA lets you define macros. Also comes in an ADB version for the SE and II. Requires 512K or more. \$169.95. DataDesk International, 7650 Haskell Ave., Van Nuys, CA 91406. Software NCP (Apr '88)

**Mac-105 Keyboard** ■■■■½  
is a good alternative to Apple's Extended Keyboard, with a larger Return key, higher and more sculpted key tops, and a lower overall weight. Requires Mac SE or Mac II. \$179; with QuicKeys, \$199. Cutting Edge, P.O. Box 1259, Evanston, WY 82930. (Feb '89)

**MacADIOS II** ■■■■  
is a hardware and software interface for laboratory instruments. Standard configuration samples up to 142 kilohertz. Documentation is sketchy. \$1,290 for Macintosh II-ready data-acquisition card; \$600 for MacADIOS II software interface. GW Instruments, 264 Msgr. O'Brien Highway, Cambridge, MA 02141. (July '88)

**MacBottom HD-70 Hard Disk** ■■■■½  
is an excellent drive that comes with some very good software, including HFS Backup. Requires SCSI port. \$1,995; 1,200-baud Hayes-compatible modem, \$200 extra. Personal Computer Peripherals Corp. (PCPC), 4710 Eisenhower Blvd., Building A, Tampa, FL 33634. NCP (Apr '89)

**Mac Crate 60-Mb Hard Disk** ■■■■  
puts a Seagate drive in a platinum casing. At \$14 per megabyte, it's a good consumer value. Also comes in 20-, 40-, and 80-megabyte models. Requires SCSI port. \$839. Crate Technology, 6850 Vineland Ave., Building M, North Hollywood, CA 91605. (Nov '88)

**MacPacq** ■■■  
transforms the Macintosh into a digital oscilloscope, waveform generator, and chart recorder. PacqManager is software expandable by means of external routines in Turbo Pascal and other languages. Version 1.03 reviewed. \$995. Biopac Systems, 42 Aero Camino, Goleta, CA 93117. NCP (July '88)

**MacRecorder** ■■■■½  
is an easy-to-use sound digitizer. Includes software to turn sounds into HyperCard buttons, mix sounds, add special effects, and convert sound formats. Stereo recording possible on a Mac II. Requires 512K or more. \$199. Farallon Computing, 2150 Kittredge St., Berkeley, CA 94704. NCP (June '88)

**MacSnap Plus 2** ■■■■  
is a 2-megabyte memory upgrade for the Mac Plus. The board has 256 kilobit chips. User installable. Not compatible with existing big screens or internal hard disks and can't be expanded further. \$729. Dove Computer, 1200 N. 23rd St., Wilmington, NC 28405. (June '87)

**MacTable** ■■■■½  
is an elegant Danish worktable that holds a Mac and printer with room to spare. The 30-inch deep by 60-inch wide table is made of particleboard and must be assembled. Cabinet is optional. Table, \$289; cabinet, \$139. ScanCo-Furn, P.O. Box 3217, Redmond, WA 98073-3217. (Mar '88)

**Migent Pocket Modem** ■■■■½  
is a 300/1,200-baud portable modem about the size of a 3-x-5-inch index card. Comes bundled with MacTerm 2.0, Borland's telecommunications DA. Manual is confusing, and technical support is minimal. \$259. Migent, 865 Tahoe Blvd., Incline Village, NV 89450-6062. (Nov '87)

**NetModem** ■■■■  
is a 1,200-baud modem that can be accessed by all users on an AppleTalk network. The modem's display lights and the dial tone are simulated on-screen. Requires 512K or more. \$599. Shiva, Suite 1200, 222 Third St., Cambridge, MA 02142-9919. (Feb '88)

**Personal LaserPrinter** ■■■■  
is a non-PostScript laser printer at a great price. Clumsy workarounds required in some applications. Printing can be slow. Requires 1 megabyte or more. \$1,999. Fonts Plus, \$299. General Computer, 580 Winter St., Waltham, MA 02154. (Apr '88)

**Personal Writer PW15 S** ■■■■  
is a tablet-based handwriting-recognition system that also allows graphics and macros. Number of misread characters is too high for general word processing. Requires 1 megabyte or more. \$895. Personal Writer, 1801 Avenue of the Stars, Los Angeles, CA 90067. Software NCP (Mar '88)

**PhoneNET** ■■■■  
is an AppleTalk-compatible network. Network can be up to 3,000 feet in length. In-place, unused phone cabling can be used for network and can be combined with AppleTalk on the same network. \$59.95 per node. Farallon Computing, 2150 Kittredge St., Berkeley, CA 94704. (Dec '86) ★'87 Eddy

**ProPoint** ■■■  
replaces the mouse with an ADB trackball. Works better on the SE than it does on the Mac II. Lefties will find the button positions uncomfortable. Requires SE or Mac II. \$139.95. Abaton, 48431 Millmount Drive, Fremont, CA 94538. (Oct '88)

**QMS Colorscript 100** ■■■■  
is the first color PostScript printer that uses a four-color thermal wax transfer technology. Works on AppleTalk. Excellent typographic capability. Currently supports only a handful of applications. Requires 1 megabyte. \$21,995. QMS, 1 Magnum Pass, Mobile, AL 36618 (Oct '88)

**QMS-PS 810** ■■■■½  
is an eight-page-per-minute, 300-dpi PostScript laser printer that competes with the LaserWriter IINT. Two megabytes of RAM is standard; upgradable to 3 megabytes. Emulates HP LaserJet, 7475 (HPGL), and Diablo 630. \$5,495. Laser Connection, 7852 Schillinger Park W., Mobile, AL 36608 (July '88)

**QuickShare** ■■■  
adds a SCSI port to an IBM PC for easy connectivity with a Mac. Can use an IBM's hard disk to run Mac applications. Requires SCSI port. Mac II and MultiFinder friendly. Version 1.24 reviewed. \$465. Compatible Systems, P.O. Drawer 17220, Boulder, CO 80308. (June '88)

**Radius Accelerator 25** ■■■■  
can make your Mac SE run 50 percent faster than a Mac II. The add-in accelerator card has a Motorola 68020 CPU that runs at 25 megahertz, and an optional 25-megahertz 68881 math coprocessor. \$1,695; \$2,195 with optional 25-megahertz 68891. Radius, 1710 Fortune Drive, San Jose, CA 95131. (Oct '88)

**SpeedCard** ■■■■½  
is an accelerator board for the Macintosh SE that more than doubles the speed of most applications. The board uses the 68000 chip found in the SE and an optional floating-point 68881 chip for number crunching. Requires Macintosh SE. \$399; \$699 with coprocessor. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. (Nov '88)

**Tektronix 4693D Color Printer** ■■■■  
is a 300-dpi bit-mapped color printer. Colors look smooth and rich. Uses bit-mapped screen fonts; most type has noticeable jaggies. Requires Mac II with color monitor. Recommended 8-megabyte configuration, \$11,490. Tektronix, P.O. Box 500, Beaverton, OR 97077. (Oct '88)

**TimeWand** ■■■■  
is a bar-code reader with a built-in time/date stamping clock. Can be used with TimeWand Manager software, a database that's extensive though difficult to use. Poor documentation but good support. Requires 1 megabyte or more. TimeWand 2K version, \$198; TimeWand Manager, \$489. Videx, 1105 N.E. Circle Blvd., Corvallis, OR 97330-4285. (Dec '87)

**Turbo Mouse ADB** ■■■■  
makes an excellent mouse replacement, even if you're not a trackball fan. If you're seeking absolute control, you can buy the optional cdev that enables you to specify custom tracking and double-click speeds. \$169.95; cdev \$15 direct order only. Kensington Microwave Ltd., 251 Park Ave. S., New York, NY 10010. NCP (Feb '89)

**TV Producer** ■■■  
is an add-in card that overlays Mac graphics and text onto a video signal. Software is clumsy to use. Requires Mac II, Apple video card, and video source. \$599. Computer Friends, 14250 N.W. Science Park Drive, Portland, OR 97229. Software NCP (May '88)

**V-series Smartmodem 9600** ■■■■½  
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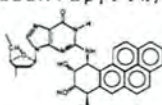
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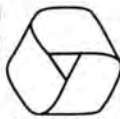
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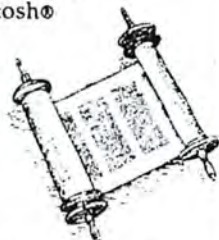
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☐ j) MIS/DP, Communications Systems, Programming  
☐ k) Engineering/R&D  
☐ l) Finance/Accounting  
☐ m) Marketing/Sales  
☐ n) Computer Dealer/VAR

**4. For which of the following products are you involved in selecting brands/models to be bought by your company or organization? (Check all that apply)**

- | SOFTWARE  | HARDWARE                                      |
|---|---|
| <input type="checkbox"/> a) Accounting                      | <input type="checkbox"/> w) Mainframe         |
| <input type="checkbox"/> p) Spreadsheets/Financial Planners | <input type="checkbox"/> x) Mini              |
| <input type="checkbox"/> q) Project Managers                | <input type="checkbox"/> y) PC                |
| <input type="checkbox"/> r) Word Processors                 | <input type="checkbox"/> z) Printers/Plotters |
| <input type="checkbox"/> s) Database Managers               | <input type="checkbox"/> 1) Monitors          |
| <input type="checkbox"/> t) Graphics                        | <input type="checkbox"/> 2) Disk/Tape Back-up |
| <input type="checkbox"/> u) CAD/CAM                         | <input type="checkbox"/> 3) Add-in Boards     |
| <input type="checkbox"/> v) Communications                  | <input type="checkbox"/> 4) Communications    |

**5. Are you involved in the purchasing of microcomputer equipment at your company?**

- ☐ 5) Yes ☐ 6) No

**6. If so, what function do you serve in the buying process?**

- ☐ 7) Evaluations/Specification  
☐ 8) Recommendation ☐ 9) Buyer/Purchaser

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**1. Please indicate which of the following computers you currently use in your company or organization: (check all that apply)**

- ☐ a) Mac Plus ☐ d) IBM PC  
☐ b) Mac SE ☐ e) Other  
☐ c) Mac II

**2. For how many micro computers do you buy products?**

- ☐ f) 1-4  
☐ g) 5-49  
☐ h) 50+

**3. Your primary job function is: (check one)**

- ☐ i) Administrative/General Management  
☐ j) MIS/DP, Communications Systems, Programming  
☐ k) Engineering/R&D  
☐ l) Finance/Accounting  
☐ m) Marketing/Sales  
☐ n) Computer Dealer/VAR

**4. For which of the following products are you involved in selecting brands/models to be bought by your company or organization? (Check all that apply)**

- | SOFTWARE  | HARDWARE                                      |
|---|---|
| <input type="checkbox"/> a) Accounting                      | <input type="checkbox"/> w) Mainframe         |
| <input type="checkbox"/> p) Spreadsheets/Financial Planners | <input type="checkbox"/> x) Mini              |
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# SCRaPBOOK

EDITED BY KRISTI COALE

## THE COMPLETE MAC OFFICE DISK HOLDERS AS MASS STORAGE

Here's the latest in mass-storage solutions for your Mac — disk holders. Forget that shoe box, desk drawer, or old disk box. Disk holders are an easy way to clean up your act, not to mention your desk.

On the aesthetic front, there's Elba's Disk Organizer, billed as the latest in European disk fashions. For \$9.95, you get a black

plastic rack that holds 25 3.5-inch disks. A slot on top holds 10 additional blank disks. It also comes with special labels.

For those who appreciate the finer things in life, there's nothing like vinyl with a pseudo-leather finish. Diskeeper Systems offers a professional-looking alternative with its Diskeeper, a \$19.95 binder

that comes with five plastic holders, each having the capacity to carry four disks securely. You can also buy individual sheets so you can keep your disks and documentation notebooks together. The two-slot model sells for \$1.95, and a four-slotter goes for \$2.35.

Fans of removable media might be interested in an 800-megabyte solution.

The Disk-O-Tech is a plastic briefcase for your floppies. Foam blocks are included to take up excess space inside and keep your disks from sliding around. This can be yours for \$69.99.

If file drawers are your favorite form of organization, consider Weber's Disk File System's ArchiveDisk-File. These small card-board file drawers can be stacked to save space, and cost \$9.95 each.

To order or to obtain more information, contact the following vendors:

**The Diskeeper**  
Diskeeper Systems  
301 Highland Road  
Cheltenham, PA 19012  
(215) 379-2440

**Disk-O-Tech**  
Disk-O-Tech  
P.O. Box 583  
Arlington, TX 76010  
(817) 277-1986  
(800) 288-4447

**Disc Organizer**  
Elba  
International Computer  
and Office Products  
318 E. Howard Ave.  
Decatur, GA 30030  
(404) 373-3683

**ArchiveDiskFile**  
Weber's Disk File System  
P.O. Box 104  
Adelphia, NJ 07710  
(201) 431-1128  
(800) 225-0044

— Kristi Coale



## WE'RE ON A ROLL

Name something on a roll: paper towels, ham and swiss, Bobby McFerrin — and now Computer Sensations' whimsical banner paper. We're talking about 36 feet of continuous-feed computer paper that's ideal for banners and signs. Because there are no cross-perforations, your banner isn't likely to rip apart at strategic points (like the middle of the birthday boy's name).

Rolling right along, Computer Sensation's banner paper comes in four colorful designs. You can choose hearts or bears for

that special someone, balloons for party gals, or confetti to celebrate your latest market killing. To get your rolls, at \$14.95 each, contact Computer Sensations at P.O. Box 3744, Long Beach, CA 90803; (213) 434-2655. And while you're at it, you might want to order some of the company's computer stationery, which costs \$12.95 per 100-sheet package. It comes in more than a dozen designs, including several bear borders, boats, flowers, dinosaurs, and holiday motifs.

— Laura Johnson





# Ed Taylor just found the world's greatest laser printer for \$8<sup>50</sup>.

They said it couldn't be done. But here is the true story of how it actually happened.

Ed Taylor was in the market for a good laser printer. Of course he could always trek from store to store comparing printer capabilities and costs, or rummage under his bed for last summer's buyer's guide.

But he did it the easy way.

He got on his modem and dialed up *Computer Database Plus*.

No matter what information you need from the back issue of a computer magazine, *Computer Database Plus* works. It lets you access every issue of 125 major computer publications going back to early 1987. With as little to go on as a key word, you can zero in on any one of thousands of reviews, articles, case histories or abstracts.

Almost as fast as Ed could type in "laser printer" he had tracked down eight product reviews—including the buyer's guide he remembered from last summer (which actually ran in January).

Even if the article you want has just hit the stands, you're in luck. *Computer Database Plus* is updated with almost 5,000 abstracts and articles every month from current publications.

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## SIMCITY

Who'd have thought that playing a computer game could also earn you some college credit? Maxis' SimCity is an animated game that's also a simulator for city planning. It's such a realistic educational tool that already a few universities across the country are considering it for classroom use.

Imagine embezzling government funds without getting caught and raising or lowering taxes as you wish. Ferdinand Marcos might have managed some of these feats without the help of a computer game, but not everyone can get away with these stunts in real life.

In SimCity, you're the mayor and planner of one of eight prepackaged cities, each of which provides real and hypothetical problems. You must decide how to develop the city, while paying close attention to such items as zoning for residential, commercial, and industrial properties; tax rates; budgeting; and power management. For instance, as mayor of San Francisco in 1906, your chief concern is to control the fires resulting from the earthquake. Later, you must clean up and rebuild the city — all within ten years. In Hamburg, Germany, in 1944, you must cope with the fire storms resulting from bombing, and rebuild a completely devastated city. There's even a scenario for Tokyo where you must control a cinematic monster that's attacking the city. You can also combat boredom in Dullsville (set in 1900), traffic in Bern (1965), crime in Detroit (1972), a



nuclear meltdown in Boston (2010), and a flood in Rio de Janeiro (2047). (Too bad they didn't include political unrest in Chicago in 1968.)

Whether you choose one of the scenarios included with the package or build a new city, you can set the user level at the start to Easy, Medium, or Hard (but you can't change the level once you begin work on any city). As you progress to the harder levels, activities and occurrences within your cities move faster. A harder setting increases the chances that a disaster will happen and decreases the tolerance of your residents, known as Sims, to factors such as — read my lips — raising taxes.

To really succeed at this game, especially at more difficult playing levels, you have to be good at multi-tasking — SimCity already is. You may think your active window is all that's happening at one time, but other activity is occurring simultaneously in the background. For example, you may be working in the Edit window when the budget window appears (selecting Auto-Budget from the Options menu turns off this function). When this happens, you can raise or lower the tax rate and decide how the budget will be divided among fire departments, police departments, and transportation.

How you spend your budget will determine

whether parts of your city deteriorate or grow to attract more residents and development. If you cut your law-enforcement budget, you'll see the crime rate rise. Consequently, the land values in the area will go down, and development in the run-down areas will slow or cease. You must also manage various disasters that could destroy parts of your city — floods, fires, air crashes, tornadoes, earthquakes, monster attacks, nuclear meltdowns, and shipwrecks. Any of these can occur in the normal course of events in the life of a city. For those with masochistic minds, a Disaster menu lets you wreak havoc on your city (except for shipwrecks and meltdowns).

Upon mastering multi-tasking (it's not that difficult), you can use some of SimCity's indicators to your advantage. A Message bar in the Edit window keeps you abreast of the latest treasury information, the date, and any problem or disaster happening at a particular moment. A nice touch is that when a disaster or problem like a traffic tie-up happens, a small GoTo icon appears. Clicking on this focuses the screen on the problem area. A sky-watch helicopter periodically flies over the city, alerting you to snarls on the highways.

Clicking on the editing icons (such as bulldozer and power line) brings up a message in the lower-left part of the screen indicating the item selected and the cost of implementing it. Also in the lower-left corner is a Demand Indicator. This reports on demand in your city for residential,



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# SCRaPBOOK

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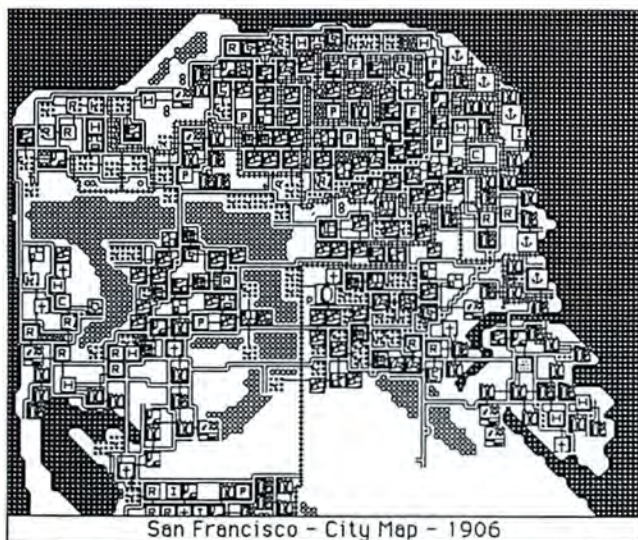
You might not be able to vote yourself a big pay raise, but you can embezzle funds. You can add \$10,000 to the treasury faster than you can buy a state lottery card. If you're lousy at managing a budget, it's an easy way to keep from running out of money. To invoke this undocumented scam, move the cursor over to the icon bar at the left, hold down the Shift key in the Editing window, and blind type FUND. The Message bar should reflect a \$10,000 increase.

Another strong point in SimCity is the instant feedback provided in the Evaluation window. This window gives results from polls rating your performance as mayor and rating the worst problems faced by the city. You also get annual summaries of the population, growth, and assessed city value, as well as a score for the city. SimCity lets you print windows to assess different situations or to keep

track of the various summaries and statistics.

The only sore spot I found in SimCity is that it's copy-protected. You can copy the program to a hard disk, but you must insert the master disk whenever you run it. Maxis promises that future versions of the game won't have this feature.

As mentioned earlier, SimCity is a powerful learning tool for students of city planning. Brown University, Arizona State University, the University of California at Berkeley, and Stanford University are all either considering using or currently are using SimCity in the classroom as part of Apple's program to bring Macs onto the campus. The documentation that comes with SimCity reinforces the educational aspect of the program. With the help of city planning consultants (in academia and city-planning departments), Maxis put together a manual that not only outlines the features of the software but also



SimCity is not a discount RAM store. It's a simulation game that's also a useful learning tool for city planning.





Could not start the application because your computer doesn't have Color Quickdraw. Maybe you should ask Santa Claus for a Mac II.

Cancel

Need help justifying a more powerful Mac? The fortunate person who encountered this dialog box later found a Mac II on his desk.

discusses the principles of city planning and puts them in the context of the simulation. It also includes a bibliography of sources used in writing the documentation.

Maxis also plans to offer a high-end version of SimCity geared specifically for city-planning students. But the real intent of SimCity, version 1.0, is to spark the interest of people not ordinarily interested in games on the Mac. For \$49.95, I could get hooked. Besides, where else can you confuse a classroom with a playroom?

— Kristi Coale

## SimCity



**List price:** \$49.95; color upgrade for Mac II, \$24.95.

**Published by:** Maxis Software, 953 Mountain View Drive, Suite 113, Lafayette, CA 94549; (415) 376-6434.

**Version:** 1.0

**Requires:** 512K

**Compatibility:** Mac II (with color upgrade) and MultiFinder friendly.

**Copy Protection:** Requires insertion of original disk each time application is selected.

## DIALOG BOX OF THE MONTH

Your boss may not cave in to terrorist demands, but this month's dialog box illustrates one way to have your requests met. Tony Hatch of San Diego says that one of his employees tried to run the program Colorizer (by Palomar Software) on his Mac SE. Upon clicking on the icon, he got the warning shown above. Tony indicates that Santa did indeed visit, as the employee is now happily computing on a new Macintosh II.

### Getting into the Act

Perhaps you've found a way to get concessions from your boss. But even if you haven't, you might still stumble across an unusual dialog box. If you do, let us in on it. It can be a profitable venture for you. All it takes is a disk with your dialog box along with a printed copy of it and a letter explaining how you got the box.

Address your submission to Dialog Box of the Month, c/o MacUser, 950 Tower Lane, 18th floor, Foster City, CA 94404. If we choose yours, we'll send you \$25.

— Kristi Coale

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Do you own Microsoft Works?	<input type="checkbox"/>	<input type="checkbox"/>
Do you own Microsoft Write?	<input type="checkbox"/>	<input type="checkbox"/>
Do you own FullWrite Professional?	<input type="checkbox"/>	<input type="checkbox"/>
Do you own WriteNow?	<input type="checkbox"/>	<input type="checkbox"/>
Do you own Word Perfect?	<input type="checkbox"/>	<input type="checkbox"/>
Do you own MindWrite?	<input type="checkbox"/>	<input type="checkbox"/>
Do you own any version of MacWrite?	<input type="checkbox"/>	<input type="checkbox"/>

If you answered yes to any of the above questions, you qualify (not exactly rocket science, was it?).

And you can get MacWrite II (a \$249 value) for only \$75, or \$65 for registered MacWrite 5.0 owners. To find out more, follow these simple steps: look at the number below, pick up your phone and dial.

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## DEVIL'S ADVOCATE



**M**aybe I'm getting soft. I'm not moaning about how John Sculley zipped when he should have zagged during the memory chip shortage. How was he to know that this was a cyclical industry? Beverage sales never fluctuated like this. Besides that, what if this price rise were permanent and you needed some memory? He'd then be a savior to both users and shareholders, wouldn't he?

Sculley has a bigger problem than that, anyway: the loss of key employees. Hardly a week goes by without an announcement by Sun Microsystems that one Apple employee or another

## The Sardonic Verses

has decided to take a job with Sun. Maybe Apple should reinstitute its free-juice policy of years back.

Our concerns, though, should not be with chips, Sculley, the price of stock on Tuesday, or Sun Microsystems. We need to look at the Mac and the creativity crises within the company. This is where we find the real problems. Here's my list:

**Systemic anemia.** Foremost are strange system crashes on the Mac. The Mac still crashes at the drop of a hat. I was scanning some documents into Caere's OmniPage OCR program. Using the multiple-document technique, I had pumped 16 documents into the system when — boom — "Sorry, a system error occurred. Restart." Thank you, ma'am. Then I had the same thing occur when trying to recover a file, using the Symantec Utilities for Macintosh disk. If you use more than one form of font loader to load various fonts into a laser printer, the system crashes left and right. If you do anything a little different from day to day, you can expect the Mac to crash on you at least once during a session. Isn't this becoming a little annoying?

**Upgrade follies.** Related to the crashing phenomenon is the System software itself. One must wonder if it is turning into spaghetti code with newcomers grinding away on it. Since the disappearance of Andy Hertzfeld and Bud Tribble — notwithstanding the not-gone-but-distracted and HyperCard-ized Bill Atkinson — who is there to do a new System for the Mac? In the same period of time Apple took to release a few bug fixes and show a ho-hum A/UX, Steve Jobs put together a NeXT-generation interface.

**Little things mean a lot.** Apple also needs better programmers for the simple stuff. It could start with a better cache. The hard drive takes an eternity to do anything. You can install the Apple cache, and it still takes an eternity. Does this cache really

work? My favorite example of mediocre Apple software (besides the backup program, to which I've already dedicated a column) is the fax and scanner software. If you buy an Apple scanner, you get a copy of AppleScan and a copy of HyperScan, written by Bill Atkinson. The two programs are similar, except that HyperScan works great and AppleScan barely works at all. Now I know why Sculley said HyperCard was the most significant thing ever announced by the company: to brownnose Bill Atkinson, who appears to be the only guy at Apple who can write code. With all the money Apple has in the bank, maybe it should consider spending some for a few good programmers.

**There's something alive in there!** As you can tell, my Mac has a scanner and a laser printer attached. This is along with a mouse, monitor, and keyboard. There's also an Apple fax and personal modem. What does this all mean? It means the system looks like a rat's nest of wires! This problem isn't endemic to the Mac, but can't someone at Apple see the virtue of infrared technology? The old, faded Apricot computer had an infrared mouse and keyboard; why can't Apple at least experiment with these technologies?

**Watching grass grow.** Apple has to put some pressure on Adobe to optimize the PostScript compiler. Using Altsys' nifty Keymaster software, I digitized some photographs and made them into a font. I wanted, of course, to look at this creation, so I typed out the font on a file and sent it to the laser printer. Fifty minutes later, the sheet of paper emerged from the LaserWriter. Fifty minutes! To print 38 characters! The delay in printing some of these files was a source of bellyaching when these printers first arrived on the scene. For some reason the complaints stopped. I think it's about time they started up again.

**A dearth of creativity.** I once compared Apple to Sony, citing the fact that Apple is a one-product company and Sony is a company that, although unsuccessful in the computer field, has an incredible range of products. The underlying question was: What does Apple do with all the personnel it employs? Where are the nifty ideas? Where is the crashproof system? Then last month I picked up a new Sony Video Walkman. This is a full-color LCD TV and 8mm VCR that fits in the palm of your hand and is battery-powered. It's technology that Americans can't manufacture or design. Looking at it makes you realize that we are doomed unless we find some way of getting our work force to do some work — to think creatively, to put out an effort.

People sense an air of stagnation at Apple, so the little irritations with the Mac become big irritations. Is the company becoming a creativity-stifling bureaucracy unable to move out of its own way? Maybe it's about time that Apple had one of its famous housecleanings, in which whole layers of nonproductive paper pushers and deadwood are "reassigned." Let's start with the software department. 



BY JOHN C. DVORAK



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Why stop working just because you're printing? Let SuperLaserSpool and SuperSpool take control. So you can use your computer again seconds after you select "Print." Even if your documents are long and complex.

See if documents have printed, preview them, or zoom in to see part of a page up close. Or send several documents to the spooler and change the printing order later. Both products work faster under MultiFinder\* than any other spoolers.

SuperSpool works with any ImageWriter\*. And SuperLaserSpool is the only spooler that works with *all* Apple\* printers. Plus, it's the only one compatible with PageMaker\* 3.0.

MacWeek said, "The speed at which SuperLaserSpool returns control of the Mac to the user is impressive, in some cases even astonishing."



## Keep insider information where it belongs.

Lock up your confidential information with Sentinel, a program that lets you convert any document on your disk into a secure code. No one can open it without the password you define. Or a Cray\* and about 50 years.

Documents and folders can be grouped together in convenient sets. Then choose one of three advanced encoding techniques, including DES, the U.S. government's official data encryption standard. Sentinel encrypts, locks and unlocks faster than any other program.

The critics at MacWorld said, "... Sentinel provides a simple, effective security tool that does exactly what it claims to do and does it well!"

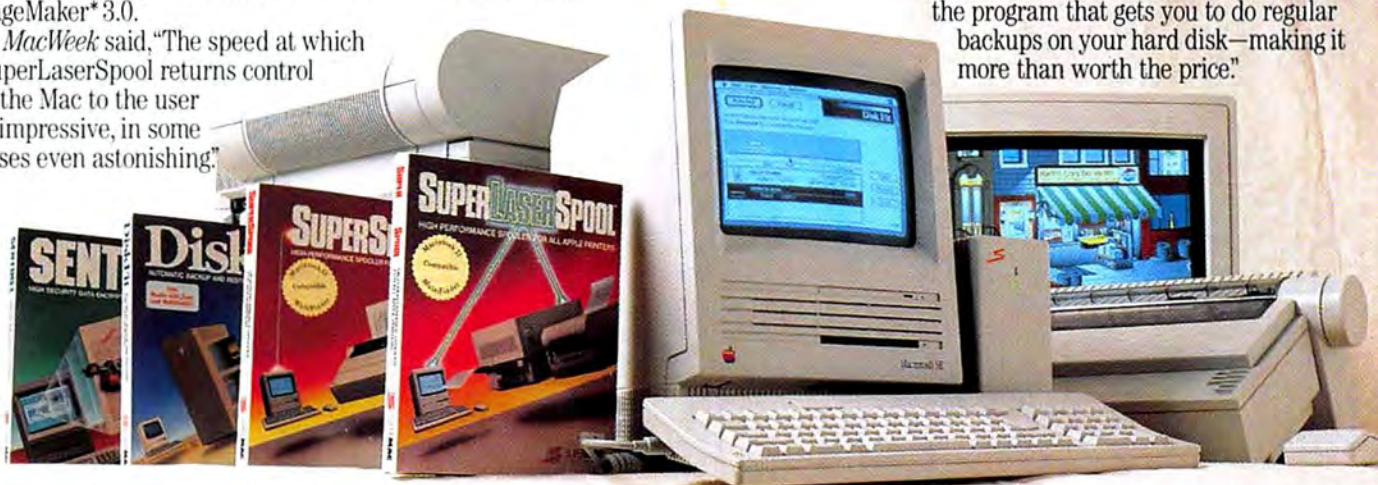


## How to recover from a crash.

DiskFit copies files on your hard disk for safekeeping. If your disk crashes, DiskFit can completely restore them. Back up just once, and DiskFit makes a complete record of files called a SmartSet.\* Then, DiskFit copies only new or modified files to the SmartSet, and deletes old files. You won't waste time copying files that haven't changed, or disk space storing old versions.

Create backups on floppies, tape, Bernoulli\* cartridges or even other hard disks. Of whole volumes, documents, system or application files. And Network DiskFit\* backs up AppleShare\* or TOPS\* networks.

As MacUser said, "DiskFit is so easy to use and so well designed that it may be the program that gets you to do regular backups on your hard disk—making it more than worth the price."



## Add SuperMac's utilities to your Macintosh portfolio.

Put SuperMac's utilities on your buy list. To protect the investment you've made in your Macintosh system, and to do more work in less time.

You'll find our family of utility programs at authorized SuperMac dealers and leading software specialty stores.



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# New for the Mac II—Protection and Convenience, On or Off Your Desk!

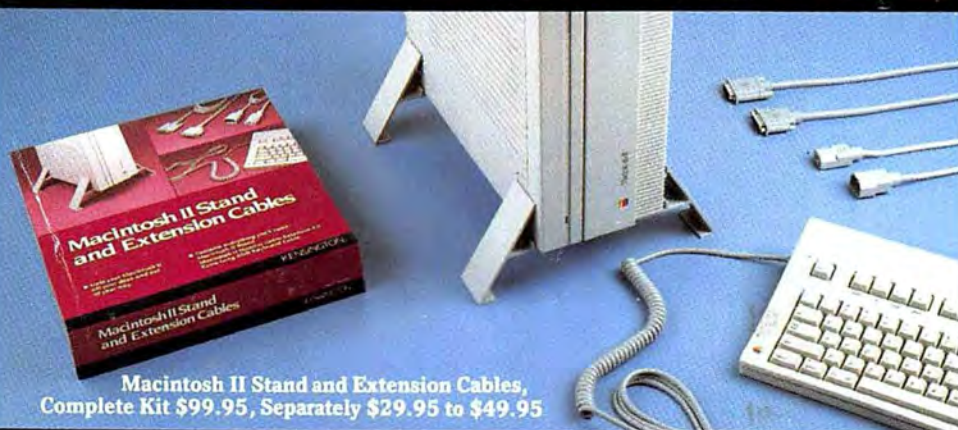


Large Screen Anti-Glare Filters for AppleColor™, Radius™, and Sigma Designs™ Monitors, \$99.95 to \$199.95

Macintosh® II Monitor Stand, \$99.95



Power Backer™ UPS's, \$399 to \$1,399



Macintosh II Stand and Extension Cables, Complete Kit \$99.95, Separately \$29.95 to \$49.95

Kensington introduces a half dozen ways to make any Mac II safer and easier to use.

Our sturdy **Mac II Monitor Stand** lets you put a heavy monitor on top of your Mac II.

Our **Large Screen Anti-Glare Filters** relieve eye strain, cutting reflected glare by 96%!

Our **Power Backers** protect your file server against every power problem from surges to black-outs. The complete line of Power Backers are small, light-weight and can be placed conveniently on a shelf or a desktop.

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